MEDICAL LIBRARY

Illinois Medical Journal

OWNED AND PUBLISHED BY THE MEDICAL PROFESSION OF ILLINOIS
Office of Publication 715 Lake Street, Oak Park, Illinois

Vol. 66, NO. 3 OAK PARK, ILL., SEPTEMBER, 1934 $3.00 a Year

CONTENTS:

Editorials (See Extended Table of Contents for Titles) 201

ORIGINAL ARTICLES

Generalizations Concerning Heart Disease. *Robert B. Preble, M. D., Chicago*..... 219

Whither Goest Thou? *Charles G. Farnum, M. D., Peoria, Ill.* 223

Facilities for Teaching Legal Medicine in Chicago. *S. A. Levinson, M. D.*, and *C. W. Muehlberger, Ph. D., Chicago*..... 228

Cow's Horn for Fixation of Fractures re Callus Formation and Technic. *Edson B. Fowler, M. D., Evanston, Ill.*..... 231

Rôle of the Hypophysis in Thyroid Syndromes. *Hugo R. Rony, M. D., Chicago*..... 234

Why the Medical Commission? *T. B. Williamson, M. D., Mt. Vernon, Ill*..... 239

Use of Base in Prism in Treatment of Myopia. *P. A. Graves, M. D.*, and *Oscar B. Nugent, M. D., Chicago*..... 241

Indigent Relief. *Cleaves Bennett, M. D., Champaign, Ill.* 246

Efficiency of Orthoptic Training in Strabismus. *J. L. Bressler, M. D.*, and *Katherine H. Chapman, M. D., Chicago*..... 249

Allergic Management of Vasomotor Rhinitis. *Michael Zeller, M. D., Chicago*..... 255

(Continued on Page 8)

Copyright, 1934, by the Illinois State Medical Society.

Entered as Second-Class Matter July 21, 1919, at the Post Office, Oak Park, Illinois, under the Act of March 8, 1879. Acceptance for mailing at special rate of postage provided for in Section 1102, Act of October 8, 1917, authorized July 15, 1918.

MILWAUKEE SANITARIUM, Wauwatosa, Wis.

For NERVOUS DISORDERS

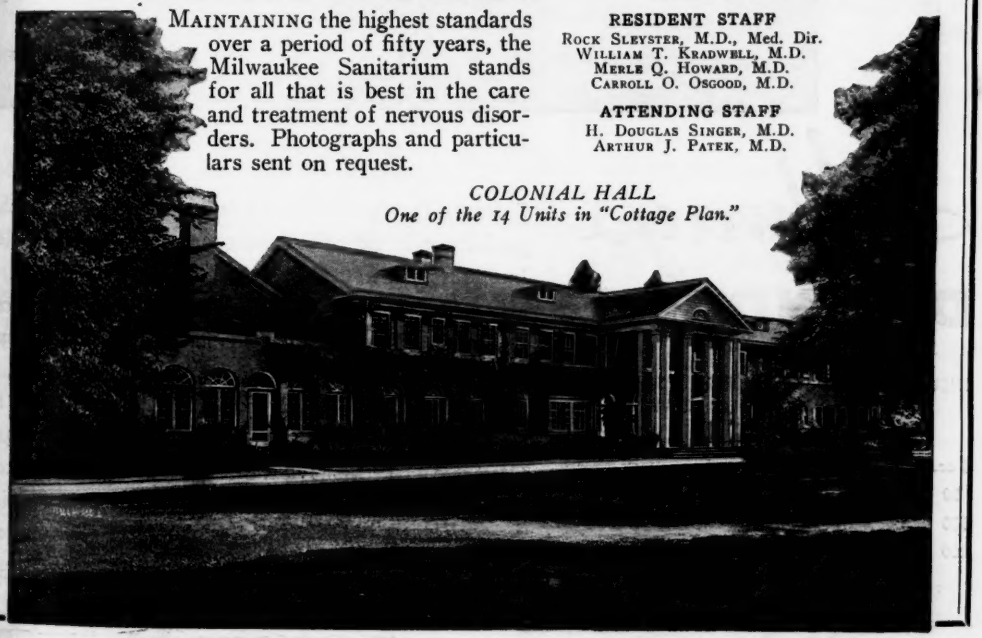
(Chicago Office—1823 Marshall Field Annex Wednesdays, 1-3 P. M.)

MAINTAINING the highest standards over a period of fifty years, the Milwaukee Sanitarium stands for all that is best in the care and treatment of nervous disorders. Photographs and particulars sent on request.

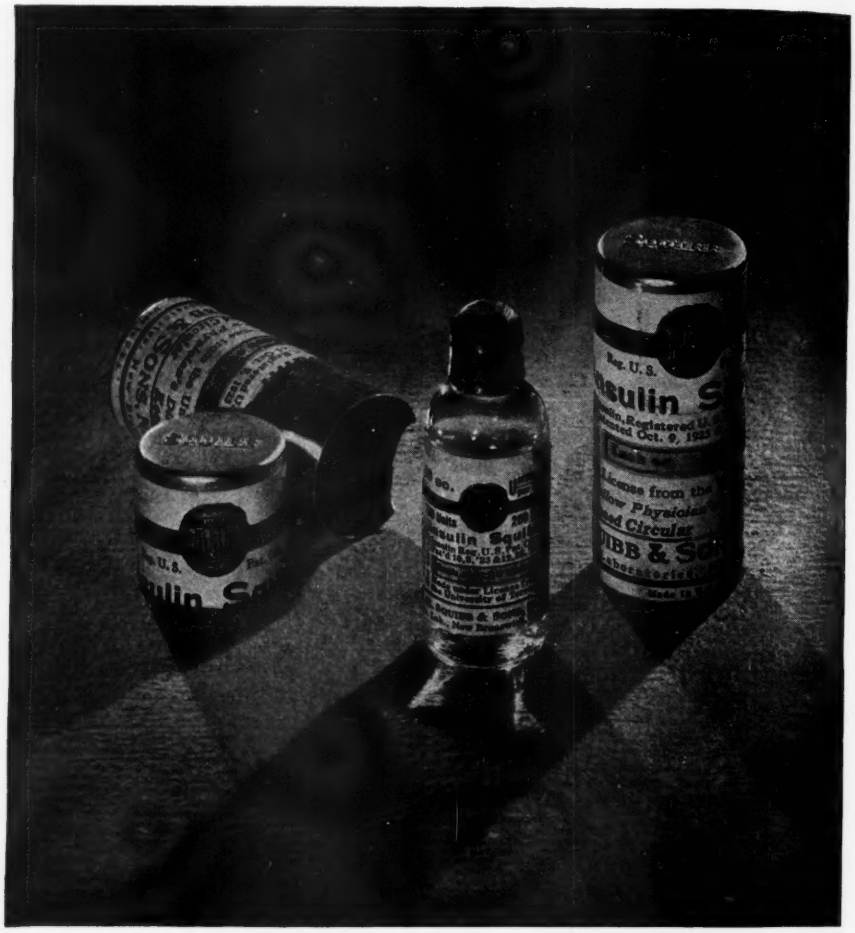
RESIDENT STAFF
ROCK SLEYSTER, M.D., Med. Dir.
WILLIAM T. KRADWELL, M.D.
MERLE Q. HOWARD, M.D.
CARROLL O. OSGOOD, M.D.

ATTENDING STAFF
H. DOUGLAS SINGER, M.D.
ARTHUR J. PATEK, M.D.

COLONIAL HALL
One of the 14 Units in "Cottage Plan."



"The *Advertising Pages* have a *Service Value* for the *READER* that no *truly Progressive* Physician *can afford to overlook.*"



Always DEPENDABLE

INSULIN SQUIBB IS SUPPLIED IN 5-cc. AND 10-cc. VIALS OF THE FOLLOWING STRENGTHS:

5 cc.	10 cc.
50	100 units (10 units per cc.)—Blue label
100	200 units (20 units per cc.)—Yellow label
200	400 units (40 units per cc.)—Red label
	800 units (80 units per cc.)—Green label

CONSIDER the significance of this statement. For behind this product are the extensive resources of the House of Squibb. Insulin research in the Squibb Laboratories has never ceased. Many refinements in its preparation have been introduced and many additional steps in its manufacture have become routine to make the Squibb quality of Insulin possible.

Insulin Squibb is highly purified, highly stable and remarkably free from protein reaction-producing substances. Great care is taken in its assay that it may be uniformly potent.

More institutions, more physicians, more patients are using Squibb Insulin than ever before. For these users are convinced of the quality and dependability of the Squibb Product.

INSULIN SQUIBB

ILLINOIS MEDICAL JOURNAL

THE OFFICIAL ORGAN OF

THE ILLINOIS STATE MEDICAL SOCIETY

VOL. 66 — OAK PARK, ILL., September, 1934 — No. 3

ILLINOIS MEDICAL JOURNAL

Published monthly by the Illinois State Medical Society under the direction of the Publication Committee of the Council.

GENERAL OFFICERS, 1934-1935

PRESIDENT.....CHARLES S. SKAGGS, East St. Louis
PRESIDENT-ELECT.....CHARLES B. REED, Chicago
1ST VICE-PRESIDENT.....A. E. WALTERS, Springfield
2ND VICE-PRESIDENT....ELIZABETH R. MINER, Macomb
SECRETARY.....HAROLD M. CAMP, Monmouth
TREASURER.....A. J. MARKLEY, Belvidere

THE COUNCIL

E. H. Weld,	1st District, Rockford	1935
E. C. Cook,	2nd District, Mendota	1935
R. K. Packard,	3rd District, Chicago	1935
J. S. Nagel,	3rd District, Chicago	1937
L. E. Day,	3rd District, Chicago	1936
E. P. Coleman,	4th District, Canton	1937
S. E. Munson,	5th District, Springfield	1937
T. B. Knox,	6th District, Quincy	1936
I. H. Neece,	7th District, Decatur	1937
C. E. Wilkinson,	8th District, Danville	1937
Andy Hall,	9th District, Mt. Vernon	1936
J. S. Templeton,	10th District, Pinckneyville	1936
Edw. S. Hamilton,	11th District, Kankakee	1935

Chairman of Council, R. K. Packard

EDITOR
CHARLES J. WHALEN.....25 E. Washington St., Chicago

GENERAL COUNSEL
EDWIN W. RAWLINS.....105 S. La Salle St., Chicago

PERMANENT HISTORIAN
IRVING S. CUTTER.....301 East Chicago Ave., Chicago

MEDICO-LEGAL COMMITTEE
J. R. BALLINGER, *Chairman*.....2724 W. North Ave., Chicago
R. O. HAWTHORNE, *Secretary*.....Kankakee

EDUCATION COMMITTEE
MISS JEAN MCARTHUR, *Secretary*.185 N. Wabash Ave., Chicago

SCIENTIFIC SERVICE COMMITTEE
FRANK L. BROWN, *Chairman*....4034 W. Madison St., Chicago
HAROLD M. CAMP, *Secretary*.....Monmouth

PUBLICATION COMMITTEE
HARRY J. STEWART, *Secretary*.....715 Lake St., Oak Park

Outside of editorial or allied views or statements that are the authoritative actions of the Illinois State Medical Society, the organization denies responsibility for opinions and statements published in the ILLINOIS MEDICAL JOURNAL. Views expressed by the various authors and views set forth in various departments in the JOURNAL represent the views of the writers.

State Society will pay no bills for legal services except those contracted by the Committee. Notify the Chairman at once. Do not employ attorneys.

Send original article, advertising copy, cuts and all communications relating to advertising to Dr. Charles J. Whalen, c/o ILLINOIS MEDICAL JOURNAL, 185 N. Wabash Ave., Chicago.

Membership correspondence to Dr. Harold M. Camp, Monmouth, Ill.

Society proceedings and news items and changes in the mailing list to Dr. Henry G. Ohls, Managing Editor, 1618 Juneway Terrace, Chicago.

Contributors will submit all copy for publication typewritten on standard size paper and double spaced. Copy not complying with this rule will be returned, if convenient.

Subscription price of this JOURNAL to persons not members of the Illinois State Medical Society is $3.00 per year, in advance, postage prepaid, for the United States, Cuba, Porto Rico, Philippine Islands, Hawaiian Islands and Mexico. $3.50 per year for all foreign countries included in the postal union. Canada, $3.25. Single current copies, 50 cents.

Editorials

THE NATION MANACLED BY NARCOTIC PROHIBITION LAWS

We have repeal of a set of liquor laws that led to the most open debauchery in educated circles of which the country has record, but we stand as a nation, still manacled by *Narcotic Prohibition Laws* that impinge upon us an evil even greater, even more disastrous and even more insidious than did those of the prohibition of alcoholics. In each instance the medical profession is ultimately the goat.

Millions have been spent in the enforcement of the narcotic prohibition laws. Yet conditions are infinitely worse than they were before. Ably has it been written that the only persons who have benefited through our eighteen years of narcotic control are those political employes whose job it is to attempt enforcement of the laws that cannot be enforced and the bootleggers of the dope traffic. Narcotic control is demanded but narcotic control should lie in the hands of the medical profession who find in narcotics at once humanity's greatest friend and greatest foe, but who know how and when control should be exerted.

When the Narcotic laws were passed it was estimated that there were somewhere between 250,000 and 400,000 addicts in this country. In 1918 the United States Treasury reported that with only one-third of its questionnaires answered there were some 146,000 known addicts. There had been some 200,000 questionnaires sent out to persons known to have contacts with addicts. It is estimated that since then some 75% of an increase has been made in the number of addicts. The A. M. A. has given as statistics the facts that of today's known addicts some 47% are under 25 years of age and some 66% under thirty years of age.

Police department records in cities totalling more than 14,000,000 *population show that arrests of addicts made in* 1932 *revealed that* 95% *of these addicts have been made since the passage*

of the bill for Narcotic control. What sounds good in Congress and looks good in books doesn't always work out well in daily life.

Frequency of addiction as to occupation was found by federal questionnaires to be "Housewives, laborers, physicians, salesmen, actors or actresses, business men or women, prostitutes, pharmacists, dope peddlers, mechanics, merchants, gamblers, newspapermen and printers." At the start you see, dope addiction is a refined vice.

To fight the spread of narcotic addiction is the purpose of a high principled body incorporated as the International White Cross Anti-Narcotic League with headquarters at San Francisco.

Their crusade is based upon the known fact that a narcotic addict is suffering from a disease induced by the use of narcotics and that the cure for such a disease lies in the hands of physicians rather than lawmakers and that the control of dispensation and of drug supply should lie in a campaign based upon the ideas of an unified medical and public health problem, with the institution of a license system of dispensation if necessary under control of the U. S. Public Health Service. Uniform methods, elimination of profit and discouragement of production are further elements of this idea which at the outset demands such legalized control of narcotics as shall result in a complete divorce of narcotic dispensation from the criminal element of the underworld and a riddance of bootleggers of dope.

Since the profit in dope runs from 500% to 1000% and since several of the Oriental nations where the opium poppy flourishes are not bound by the convention of 1933 or any other convention, the answer to the present situation is both obvious and human.

Quoting from experts on the subject let it be noted that:

"Dr. W. E. Dixon, one of the leading physicians of England, Reader in Pharmacology, Cambridge University, made an investigation as to result of Harrison Act and in 1923 wrote: 'In December, 1914, the Harrison Narcotic Law came into existence—it had the support of both the public and medical profession—in effect, this law dictates the manner of practicing medicine. It has now been actively enforced eight years, and it is the universal opinion of those best able to judge that it has signally failed in its purpose. The number of addicts and the amount consumed is as great or greater than in 1915—smuggling is rampant on the Atlantic and Pacific, from Canada to Mexico. The law has not altered the supply but the channel of distribution."

An editorial in the Courier Journal, Camden, N. J., 1925, reads: "The truth is, the government has not only failed to suppress the traffic but has helped it to grow by exaggerated and misdirected restrictions."

The years that have passed since these two statements were made have seen conditions grow steadily worse. An endless stream of humanity is going through our courts with new and young faces continually appearing—an endless stream of narcotics is crossing our borders, east, west, north, south by boat, airplane, motor car and in every other conceivable manner. It is being smuggled by the ton instead of ounces and pounds as it was only a few years ago.

The Ezra brothers recently convicted in San Francisco brought in through the port of San Francisco in three years sufficient to forever put to sleep the entire adult population west of the Rocky Mountains.

CAUSE OF FAILURE

First—the traffic is international in its origin and national only in result—we have concentrated upon the result, tracking and jailing the victims. Colonel Arthur Woods, formerly Deputy Police Commissioner of New York City writes: "Since the enactment of the Federal Act, actually thousands of addicts and small peddlers have gone into the prisons while with but few exceptions, the high financiers of dope smuggling remain at large. In practice this state of affairs amounts to little more than prosecuting the victims of the traffic and permitting those who reap the monetary benefits to go unmolested."

This practice is as futile and ineffective as swatting mosquitos to prevent malaria and yellow fever instead of drying the swamps that breed the germs. Foreign dope factories are the swamps that breed narcotic poison, smugglers and peddlers, like mosquitos, distribute it, and the victims are swatted to the tune of millions annually.

If these factories were manufacturing a bacteria to be smuggled and spread among the youth

of our land causing a terrible disease, our secret service would be called into action, the people would rise up in arms, nations would be horrified, yet no bacteria is more deadly than the poisonous narcotics being distributed and all we do is to make a gesture toward the breeding place and punish the victims.

Chief Justice William McAdoo of New York City: "We will get nowhere in useless debate about 'cures'—'custodial treatment'—raids on opium dens and arrest of addicts, nor in dealing with that cream of scoundrelism, the peddler and smuggler, unless we close the stream at its source—not wasting our energies trying to divert it here and there."

Second—Lack of education. Ten years ago, the 18th Congress of Legal Medicine for French speaking people passed a resolution in regard to illicit narcotics that "Repressive measures be supplemented with educative propaganda."

"We spend huge sums to teach the farmer how to protect his hogs from cholera—cattle from hoof and mouth disease—cotton and trees from boll weevil and bugs, but nothing to teach human beings that a narcotic is toxic—a poison that within a few weeks will create a terrible disease for which there has yet been found no cure. A famous diplomat once said: "You must put into the schools what you would have in the life of a nation a generation later," yet our schools are pitifully lacking in instruction on the dangerous narcotic poison.

Third—The law fails to recognize addiction as a disease as does the medical profession the world over—that the victims cannot perform the simplest duties without a daily dose—that the narcotic does not give a "kick" or "thrill" to those in whom this disease has been created but only spells relief from suffering almost beyond conception—that the addict is normal only under the influence of the drug, and abnormal without it.

U. S. Court of Appeals, Judge McDowell's opinion in a case where the chief witness was an addict: "The medical writers seem to be agreed that whenever a morphine addict is not under the influence of at least his usual dose, he is in a state which ranges from extreme discomfort to intense pain. In other words, morphine addicts should be mentally at their best when under the influence of their customary dose, and at their worst when in need of it."

No nation penalizes the victims as we do. A German jurist was amazed to find that our laws made the use of narcotics a crime and that we sent the users to penal institutions. The same power that brought into existence the tobacco we smoke, brought into existence the poppy that produces a drug which has become a great blessing in the practice of medicine—an untold blessing to those suffering with incurable disease—to the wounded on the battlefield. Why should it be a crime to use one and not the other?

The difference in the two is—one is toxic and creates a toxemia in the body, a specific disease, said by some to be the "most terrible in the history of man," *a disease that manifests itself only upon withdrawal of drug,* but a disease should never be classed as a crime however contracted, and it is as unjust to penalize the victime of narcotics as it would be to penalize the victims of venereal disease. One person commits an act that causes one disease—another person commits an act that causes another disease, we make one a medical problem and the other police.

As a matter of fact about 90% of all diseases result from ignorance, misconduct, indifference and carelessness. Opium and morphine are medicines just as much as aspirin, quinine or any other drug used in the practice of medicine and it is incredible that their use should be considered immoral and a crime any more than the use of other drugs.

The International White Cross is trying to prevent the spread of this disease for the same reason that other associations are trying to prevent the spread of tuberculosis and venereal disease—no person can have a maximum vitality and energy with a diseased body, and no nation can be a strong nation if a considerable number of its population are diseased, dependent upon a narcotic every day to keep normal.

Prior to law, the majority had become users through patent medicines, practically all of which contained narcotics and through treatment by the medical profession, who, many years ago, used narcotics more freely than now. They did not have the improved salicylates, aspirin, etc., for relief of rheumatic and nerve pains neither

did they have the non-toxic hynotics now used for nervous conditions and insomnia. *Today it is conceded by all authorities that about one-half of one percent of addicts are made by the physician in the treatment of disease.* They are made through the activity of the traffickers who know that once a victim, always a customer, and the sensational, distorted stories carried by the press and popular fiction about the "thrills" and "kicks" have aided the peddler—they have aroused curiosity.

A group of school girls standing on a corner in San Francisco were looking at a publication carrying one of these stories and a bystander heard one say: "wonder how dope makes you feel, I'd like to try it."

It is estimated that the cost of apprehension and prosecution of a person is $50, hence New York City has spent $15,000,000 arresting and prosecuting 12,000 addicts—they are still addicts and nothing has been accomplished toward solving the problem.

The Federal Government has spent some $32,000,000 in enforcement—add to this the cost of state, municipal enforcement, plus transportation and maintenance of victims in jails and penitentiaries, and we cannot have less than $125,000,000. A conservative estimate of the loss through thefts the past 18 years would be $200,000,000. In other words, no less than $325,000,000 have been taken from the pockets of the public during our futile effort to prohibit narcotics.

The International White Cross has drawn up eight articles of a plea for a change in the legalized aspect of narcotic drugs. These are embodied in a so-called "license system" which claims a gain to the nation, both economical and humanitarian. The eight articles of defense for this system are:

First—Each community would care for its own addicts—as it is, a certain type drift from city to city seeking a place where the drug is easiest to get.

Second—Millions would be saved to the merchants annually that they now lose through shoplifting and petty thefts of all sorts.

Third—The penal institutions would be emptied of addicts thereby saving millions for their maintenance.

Fourth—Cost of apprehension and prosecution running into millions annually would be saved.

Fifth—Inasmuch as addicts, before the law came into effect, worked, supported themselves and families, there is no reason why addicts of today cannot work if they have their daily dose to keep them normal—their earnings would go into legitimate channels of trade—under the present system, the enormous amounts secured through thefts goes to support the international dope ring and foreign drug factories.

An addict, a skilled mechanic, told a member of the White Cross that he could earn as good living as anybody if he could get his regular dose but that often he was unable to contact the peddler in time or did not have sufficient money to pay the price demanded. Because of the sickness that resulted, he could not report for work, and this irregularity prevented his employment.

Sixth—It would automatically eliminate the peddler—no one would pay $1 a grain when he could get it for less than ten cents, which would be pure instead of adulterated as the illicit product is.

Seventh—It would prevent the making of new addicts—with the peddler eliminated, there would be no activity in this connection.

Eighth—It would eliminate graft and corruption—we know that tons of narcotics are not smuggled and distributed annually without protection any more than liquor was.

St. Louis Post-Dispatch, 1925: "Disrespect for law—lawlessness and grafting go hand and hand with prohibition of both liquor and narcotics."

Dr. Paul Wolff, a well known authority of Berlin, says: "The danger to a country is not merely the medical damage done to the addict but serious harm by the widespread corruption introduced by it into all classes of society," and Dr. Wu Lien Teh, the most famous of Chinese physicians, is a leader in a movement which favors a government license system for dealing with narcotics. This, he says, "would do away with smuggling and bootlegging together with bribery of officials."

All this to gain and nothing to lose. When a system has been in force eighteen years and utterly failed to achieve its purpose it is time to change it.

HAS THE CHARACTER OF MODERN LIFE BROUGHT TO WOMEN MATERIALISM AND UTTER LOSS OF THE INTERNAL VALUES

Some of our mental hygienists are just now discovering that women whose reproduction nerve centers are occupied with mental creativeness or the achievement of great manual dexterity in crafts or trades are less concerned with physiological reproductivity. Especially is this true of young women.

What did they expect? For years feminist teaching was far too anti-feminine: All this fight for equality in public life was bound to turn women from kitchen and cradle. To lead them to self betrayal.

That was a foreseen eventuality. Not, however, an incidental arraignment of higher education, merely an episode.

Yet there is great to do over certain pronouncements made recently by one of the medical consultants in mental hygiene at one of the great western universities, who said in part, and spoke as a woman dealing with women:

"In her struggle for equality, or superiority, the college girl is driven away from her instinctive and cultural self toward an attitude which she cannot assume without destruction to her finer senses.

"The strain is showing in abandonment to the excitement of relations with college boys which are not true or natural in some college girls. Other girls become shy and withdraw within themselves, while others become bloodless, cold and unscrupulous.

"The movement for general sex education, has unloosed a flood of talk until sexuality has become an obsession.

"Twenty years ago, there was a general movement for sex education, taking the place of positive silence on the subject. Many of us had high hopes that it would solve many of the difficulties of marriage and relationships between men and women. In this it has signally failed.

"There is more unhappiness in marriage and more confusion in relationship than ever before. A situation must be sensed through feeling, and reason can only cloud the issue.

"Women today are undervaluing the family and marriage.

"We are informed that marriage is nothing but an outworn convention legalizing sexuality. Mothers with large families are discredited today.

"One hundred years ago new demands of women brought these three great mental changes.

"That raising a family is ignoble and troublesome.

"That the lot of the male is colorful and interesting.

"That an animosity to the male must be felt because the male keeps women out of his colorful life.

"The character of modern life compared with that of only a few years ago has brought materialism and utter loss of the internal values. In order to find their way back all women must return to the inner realization of feminine values.

"Men are used to the struggle of learning why things are as they are and why they behave as they do. But women are subjected to a strain when they get beyond the relationship instinct or feminine emotions.

"False assumptions, as to sex freedom for the ardent campaigner of the latter half of the past century had all the validity of cosmic truth. Girls today must realize that feminine and emotional qualities must not be stifled in the struggle to equal the other sex mentality and that to stifle these emotions brings nothing but destruction and unhappiness to life. It is vital for girls and women today especially the college girl to get back to the real evaluation of other human beings."

What a *change,* my brethren, *what* a change!

CHRISTIAN SCIENTISTS COME OUT FLATLY AGAINST STATE MEDICINE

When the arch-foe of scientific medicine, the sect of Christian Scientists, comes out flatly against state medicine, not because this monstrous jape is medicine, but because it is political jobbery spawned by chaos and communism, then indeed would *le dernier mot* appear to have been spoken!

Now, no matter what other accusations may have been made against the followers of the cult and creed established and expounded by the late Mary Baker Glover Eddy, nowhere has there ever been raised so much as a breath, let alone a whisper, as to the patriotism, the simon-pure Americanism of the members of the Church of

Christ, Scientist. Nor, and it must be stated emphatically that this comment is free from any idea of disparagement, has there ever been any doubt in the minds of the non-Eddyites that this same group lacks business ability. Quite the contrary! For commercial acumen, Christian Scientists are decidedly celebrated. A Christian Science healer or reader can collect his or her bills with a maximum of totality that leaves the average practitioner of medicine, deaf, dumb and blind from envy. Whatever criticism against Christian Science may or may not be founded, the lack of a good business sense is not one of them. That "charity begins at home" and that "faith without works," or prayer without the purse doesn't amount to the proverbial picayune is a well established tenet of the practicalities of the followers of Mother Eddy.

It is therefore with interest that even the critics of Christian Science note with what emphasis the cult puts thumbs down on state medicine and all its works.

Dispassionately the Scientists have discovered that state medicine is not only what it purports to be but an insidious attack upon that part of civilization that is trying to stand, man to man, shoulder to shoulder for an equable distribution of the carrying charges of human existence.

So strongly does the membership of the Church of Christ, Scientist, feel on this subject that it is a matter of comment in the mouthpiece of the organization, the *Christian Science Monitor*.

Against this politically controlled injustice the editorial columns of this periodical, one of the most ably edited in the country, speaks frankly and precisely.

Terming state medicine "medical peonage," this editorial says:

"The family physician who brought kindliness, ready sympathy and unselfish service in large quantities along with his pills and potions has been passing from the American scene; more and more his place has been taken by a complex mechanism, a highly departmentalized professionalism, with impersonal efficiency its dominating sentiment. Now there is a tentative plan for a broad organization of 'state medicine,' as recently outlined by the secretary of the Milbank Memorial Fund of New York. This plan, utterly impersonal, purposes that the American population—including that 62 per cent. which the fund's spokesman says receives no medical, dental or eye care of any kind—shall be coerced into supporting financially and yielding physically to the domination of a group of state-employed men.

"It is difficult to understand why every citizen—including those who by choice would adhere to a rival school, to no school, or who depend upon prayer for healing—should be compelled to comply with such a regulation. Incidentally, it is strangely foreign to the legend of the family doctor, who worked under the motto, 'To each according to his need; from each according to his means.'

"Yet it is just this point which the Milbank fund stresses as its reason for proposing compulsory state medicine. The complexities of modern medical practice, it is claimed, have elevated its cost above the means of many who wish it. Therefore, what could be simpler than for everyone to contribute his proportionate share of the total cost of medical aid, thus minimizing the per capita cost according to the well-known practice of insurance?

"If those who feel they wish material aid in their illness were left free to enter or refrain from participation in such a scheme, no criticism could be leveled at it. But, in order to make the plan thoroughly effective, says the fund's secretary, it must be made compulsory upon all. But will that 62 per cent. of the people who have not felt the need of medicine sufficiently to seek its aid—although it is offered without cost in countless hospitals and clinics—permit themselves to be saddled with medical peonage?"

DOCTORS ARE RARELY VISITED AGAIN BY A PATIENT AFTER THAT PATIENT HAS ACQUIRED THE FREE CLINIC HABIT

The *American Mercury*, one of the most fearless of lampooning crusaders against American errata, has taken a whack at national pinheadedness as exemplified in intelligent support of free clinics, free medical service and other deliberate lay malfeasance against the scientific practice of medicine.

Under the title "The Plight of the Doctor," this article says in part:

"It is now customary, even in hospitals main-

tained by public and private contributions, to make small charges for medical service and drugs in the so-called free clinics. But it has never become customary for the doctor to be paid for his work in these clinics. As a matter of fact, many doctors have been dismissed from hospital staffs for violating the rule which forbids a doctor from inviting a clinic patient to become his private patient.

"And once a free patient always a free patient. Doctors have observed that they rarely ever are visited again by a patient after that patient has acquired the free clinic habit. The patient reasons that he was a fool, indeed, ever to have paid doctor's bills. 'With free treatment available just around the corner?' And most of those who first entered free clinics because of the economic depression never again will patronize their family doctor. They have joined the nation's vast army of free patients, and to what a size that army will grow no one can tell.

"There are 500,000 persons in this country being treated in free clinics each day. It may be assumed that the attention given the average patient is worth a minimum of $2, as this attention is exactly what the patient has been getting from his family doctor. As in all free clinics the doctors donate their services, it may truthfully be said that doctors are donating $1,000,000 daily to the sick poor and those who pretend poverty to procure free medical service."

DOCTOR OCHSNER'S BOOK ON MEDICAL ECONOMICS—A BEACON OF LIGHT APPEARS IN MASS OF ECONOMIC MISINFORMATION

In the welter of misinformation, propaganda and falsehood—direct, even when not deliberate—as to Social Insurance, and especially that ramification of this measure known as Compulsory Health Insurance, appears at last a beacon light. Plain, cold facts, hard, ironclad findings on this burning issue of the times are set forth with rare veracity and in good plain English by Dr. Edward H. Ochsner of Chicago, Ill., in his book, "Social Insurance and Economic Security."

Compulsory Health Insurance has been tried and found wanting in Europe. Its continuance there and its international extension by adoption in the United States is of great personal interest to a horde of selfish socialists, skilled in the juggling of figures and in the usage of phrase.

So we have had a deluge of doctrine and a flood of figures. It has remained for Dr. Ochsner, an economic expert of rare discretion, to dig in and to separate the chaff from the wheat.

His conclusions are given to the public in such form that laymen as well as scientists may read understandingly and learn with facility.

Dr. Ochsner has retired from the practice of medicine. He has at stake nothing but his worship for what is right and his devotion to human needs. He has a passion for justice and a quality that for lack of better wording might well be called social and economic competence—a gift of the gods that is inherent rather than acquired. With an utterly dispassionate and mathematical exactitude Dr. Ochsner presents the facts as they are proven by existence and experience.

Writes Dr. Ochsner: "The reason why the wrong is so often victorious over the right is because only too often wrong is championed by someone or by a group that expects to make capital of it; while the right, which affects society as a whole, usually has no champion or champions who are personally, individually or collectively affected more than is society in general."

Since Dr. Ochsner is more capable of expressing his own ideas than is anyone who attempts this expression for him, it may not be amiss to quote from his own foreword to "Social Insurance and Economic Security." In this he says:

FOREWORD

Education without experience has little if any meaning.

During the summer of 1931 I conceived the idea of writing a series of twelve short articles on Social Insurance and submitting them to a number of medical journals to appear simultaneously in as many of the journals as would be willing to print them under these conditions. In furtherance of this idea, I released the first article of the series on December 16, 1931, to forty-two medical journals and one dental journal with the following letter:

"Dear Doctor:

"For a number of years I have been convinced that Social Insurance is one of the most important problems confronting the civilized nations of the world and that Compulsory Health Insurance, a branch of Social Insurance, is the biggest quasi-medical question before the medical profession of this country today.

"Acting on this belief, I have prepared six short articles which consider the problem from its political and economic effects upon society in general. If these articles are well-received by the editors, I intend to write six more, the material for which I have already collected. These latter articles will consider the effects of such legislation upon medical practice.

"My plan is to release one of these articles on the 16th day of each month, for publication the following month, to all of the statte medical journals, to a few of the privately owned journals that devote space to such problems, and to the Journal of the American Dental Association.

"In order to avoid unnecessary expense, I should appreciate your advising me by letter of your decision or by sending me a copy of the journal in which the article appears, in order that I may know whether you are publishing the enclosed article and whether you care to receive and publish subsequent releases. Of course, publishing one or more of the first of the series does not obligate you to publish subsequent ones. Should you be disposed to do so, I can see no objection to your using the first two paragraphs of this letter as an introduction to the first installment herewith enclosed.

Very respectfully,
EDWARD H. OCHSNER, M. D."

Somewhat to my surprise and certainly to my gratification seventeen medical journals and one dental journal agreed to the proposition and published the series throughout the year 1932, most of them regularly and a few of them at intervals. During the year in which the articles have been appearing in the various journals I have received a considerable number of communications commending the various articles and only three criticizing them. Of those who commended the articles, a considerable number urged me to collect them all and publish them in book form. Of the three letters which criticized the series two were from out and out socialists who naturally would criticize anything which upholds the present social and economic order. The other criticism came from a journal editor who criticized them on the score that they did not present enough statistical data and hence were really only expressions of personal opinion. That there was some basis for this latter criticism I had to agree, but not to the extent which might appear on the surface.

In the first place, if I had made my articles sufficiently long to carry many statistics and references coupled with the necessary explanations and comments, it is very doubtful whether any journal would have been willing to publish the whole series. In the second place, most of the statistics available have been compiled by government employes who have a natural bias in favor of the system which gives them a good living. As one student of this problem says, "It is not that the facts are falsified. It is only that they are carefully selected."

Mortality statistics in all civilized countries are fairly reliable. Morbidity statistics less so, and statistics as to the relative cost of medical services to a nation under a system of private practice and under Compulsory Health Insurance are even less dependable because there are too many extraneous matters involved. When we come to most other problems, such, for instance, as the relative value of medical services rendered under the two systems and the effect upon the morale of the insured, we find that these do not lend themselves to statistical analysis at all, and yet these are by far the most important problems to be considered.

I agree that statistics if carefully and conscientiously collected and compiled do not necessarily lie, and yet when it comes to using statistics in evaluating the more subtle human relations, such as those which must of necessity exist between the physician and his patients, they rarely if ever tell the whole truth. Again, a table of statistics usually does not mean much unless analyzed, and it is just in this analysis and in their interpretation that so much error is likely to creep in. The conclusions reached by various interpreters will vary greatly according to their personal background and experience. This is all very well known and yet rarely given the emphasis which it deserves.

In this connection it is interesting to note that Æsop had encountered this same problem, as illustrated in the following fable:

THE LION AND THE STATUE

A Man and a Lion were discussing the relative strength of men and lions in general. The Man contended that he and his fellows were stronger than lions by reason of their greater intelligence. "Come now with me," he cried, "and I will soon prove that I am right." So he took him into the public gardens and showed him a statute of Hercules overcoming the lion and tearing his mouth in two.

"That is all very well," said the lion, "but proves nothing, for it was a man who made the statue."

"We can easily represent things as we wish them to be."

In addition to the unreliability of statistics in general and those of the proponents of Social Insurance in particular, the same criticism that was made in reference to my series can be made with equal if not even with greater justice about many of the articles in favor of Social Insurance. Thus the article by E. Hackforth is very laudatory and yet produces no evidence whatever that National Health Insurance has really benefited the English nation as a whole. To quote only one sentence which appears under the paragraph, Success of the Scheme: "As regards the effect of the scheme on the general health of the nation, it is difficult to produce any convincing statistics, but the fact that all insured workers are entitled to free medical attendance immediately they have any need of it must obviously be conducive to prompt treatment of incipient illness, with a consequent lessening of more serious results." We shall, I believe, be able to produce proof that his conclusion is "obviously" incorrect.

I am thoroughly convinced that personal opinions based on ample experience and mature judgment are

much more valuable than the sort of statistics previously referred to, and infinitely more valuable than the opinions of swivel-chair doctors who sit in their offices directing medical work without actual personal contact with the sick. One of the best preparations for evaluating such problems as Social Insurance is to have had a large and varied experience not only with medical and economic problems in general but especially with all sorts of people in various walks and vocations in life. This sort of personal experience is much more likely to develop dependable judgment than that obtained by second hand knowledge.

As much as I dislike and hesitate to do this, in order to establish the value of these opinions, it seems necessary to state upon what personal experience they are based. I passed the first fifteen years of my life on a large midwest farm in the pioneer days, going to country school six months of the year after the age of five and helping about the farm as soon as large enough to do so, and in those days that began very early in life for practically all of the farm boys. I attended high school for two years in a progressive midwest town of five thousand inhabitants and taught country school two winter terms of six months each. I was lumber-jack in a large lumber camp six months and "hired" man on various large farms for three summers. Then came a four year pre-medical course in the University of Wisconsin; three years at Rush Medical College; nineteen months resident physician and surgeon at Cook County Hospital; two years post-graduate study in Austria, Germany, and Sweden. Five years were devoted to general practice and acting as first surgical assistant to one of the most brilliant surgeons this country has so far produced, a man who probably did a greater variety of surgical operations than any man in the history of surgery and did them with a skill and dexterity rarely equaled. Five years adjunct professor of clinical surgery, University of Illinois Medical School. I practiced twenty-four years in general surgery. The four years as president of the Illinois State Charities Commission, during which time there were under our supervision about eighteen thousand wards of the State, gave me contact with those suffering from almost every physical, mental and emotional disturbance to which man is heir.

My first direct personal contact with the problem of Social Insurance occurred in the fall of 1896 as assistant in an ambulatory "Krankenkasse" nose and throat clinic in Leipsic. The clinic was under the direct personal supervision of a "Private Docent" of the university, a man in the forties with excellent training, high ideals, and fine personality, and yet I can truthfully say that the services rendered to the patients were mediocre, about the type of services usually rendered in the city and college dispensaries of this country. The treatments were mostly simply pallitative, rarely curatives, and no time was spent in personal hygiene and preventive medicine for the simple reason that the time was so taken up with trivialities that there was no time left for the more important problems. It was my privilege to become fairly well acquainted with the head of the clinic and one day about 2:30 P. M., after we had all worked without interruption since 9:00 A. M., the head physician said to me—"Now I am going home to my private office so that I can supplement my meagre income from the 'Krankenkasse' with a little private practice income so that I can support by wife and baby decently." I had the privilege of entering his home, a modest second story apartment of seven rooms. One room, which was used as his consultation-room and the sitting-room, had the double function of family sitting-room and reception-room for patients. From Leipsic I went to Hamburg to serve as externe in the Neue Allgemenie Krankenkasse located in the suburb of Eppendorf, a cottage hospital at that time of some fifteen hundred beds. It is here that I had my second direct contact with Social Insurance. I had been there only a few days when one morning I made rounds with the head-surgeon of the hospital, Professor Kuemmel. We went to one of the pavilions for third class male patients where Professor Kuemmel spent considerable time examining several patients. As we stepped out of the pavilion, Professor Kuemmel turned to me, the only American in the group, and with a good deal of emphasis and some heat said about the following: "I have to waste one-quarter of my time ferreting out malingerers." While there was probably some exaggeration in the statement I soon found out by further personal observation that there was much truth in what he said. My third personal experience was in the winter of 1904 and 1905 in the ambulatory "Krankenkasse" clinic of Professor Schleich in Berlin.

These three experiences gave me an insight into the practical workings of Compulsory Health Insurance as no purely theoretical knowledge could have given me. In addition to the foregoing personal experience, I have kept in touch with the problem, reading and studying a fair number of the outstanding publications which have appeared from time to time on the subject. One more point has, I believe, an important bearing on this subject. During the first eighteen months which I spent on the continent of Europe in post-graduate study, I lived seven months in Vienna, two months in Leipsic, six months in Hamburg, and one month in Stockholm, I never slept one night in a hotel. Being able to speak the languages in these countries, I found lodging with middle class families in the better portions of the city immediately on my arrival. I did this purposely in order to become better acquainted with their modes of life and their mental attitudes to many of the social, religious, and economic problems which confronted them. In this way I gained much interesting and valuable information on many subjects including Social Insurance and the story I obtained behind the scenes, so to speak, was a very different one from the one usually over the right foot-lights by the well-paid laymen and quasi-professional men in high official positions who are intrusted with the management of the system.

Granting average intelligence, it is, I believe, fair to conclude that the opinions based on such experience and expressed in this book are of more value than conclusions reached by impersonal study, endless delv-

ing into books and perusal of pages and pages of statistics, particular when such statistics are practically all compiled by persons with a bias. When it comes to a problem so intricate and involved as Social Insurance is, the only opinions and conclusions that are really worth while are those which are reached after the correlation of a great number and variety of facts, and of these facts, those which are gained by personal experience are by far the most dependable.

In order to meet the objections to my series previously referred to I have added to my own experience and observation and the conclusions based thereon such statstical evidence as seemed entirely reliable and such quotations from the literature as seemed unbiased and hence dependable.

IN CONCLUSION TO THIS FOREWORD

If all the phases of Social Insurance were put into force in all the states of the Union immediately, it would not affect me as a practitioner of surgery because I have retired from active practice. As one who loves his profession, I protest most vigorously against the mechanizing and mediocratizing of the medical profession; as a taxpayer I object to adding to our already burdensome taxes; and as an American citizen, I am opposed to the breaking down of the morale of my fellow-countrymen, which, I believe, is the inevitable consequence of any system of Social Insurance which could be devised.

Even more explicatory is the preface, in which Dr. Ochsner remarks:

PREFACE

Social Insurance as the term is now quite generally employed consists of the following subdivisions or parts: compulsory health insurance, old age pensions, widows' and orphans' pensions, and unemployment pensions or doles. In none of the countries were they all adopted at the same time. Germany adopted compulsory health insurance in 1883, and all of the other forms since that time. Austria adopted compulsory health insurance in 1888; Hungary in 1891. England adopted old age pensions first and compulsory health insurance in 1911, and the others subsequently. According to the latest reports available, forty-two countries now have some form of compulsory social insurance. In this country, twenty of the states have adopted old age pensions and some widows' and orphans' pensions, but so far none have adopted compulsory health insurance, for which negative blessing let us raise our voices in thanksgiving.

While much has been written on Social Insurance, most, if not all of the books, monographs, magazine articles, and even government reports, have confined themselves to some one branch or even phase of the subject, and the great mass of the writing has been done by propagandists who devoted their attention to the aspect of the subject in which they were particularly interested.

It seems desirable that a book be written at this time which takes up the more evident basic faults and underlying fallacies common to all of the subdivisions of Social Insurance.

We shall not discuss, at least if so only incidentally, the development of Social Insurance in the various countries nor the changes that have been made in the various systems from time to time. Nor shall we analyze the points of difference which exist between the various types of Social Insurance now in force in the several countries because, in the first place, these things have been done innumerable times, and in the second place, because it would tend to confuse the issue by diverting the attention from the fundamental problem involved. It is our firm conviction and belief, and hence our contention, that all the systems are intrinsically bad—only "some are worse."

When the scientific physician wishes to study and describe a disease he proceeds in about the following manner: He makes some general observations, selects a suitable name, formulates a definition, ascertains its origin, its causes its symptoms, its probable outcome, and a remedy or remedies for its allevation or cure.

Since we look upon Social Insurance as an economic disease, let us proceed in our study of it along these general lines.

"It will be a bad day for society when sentimentalists are encouraged to suggest all the measures that shall be taken for the betterment of the race."—Woodrow Wilson.

Bruce Humphries, Inc., Publishers, Boston, Mass. Price, $2.50.

THE EFFECT A MAN'S JOB HAS ON THE LENGTH OF HIS LIFE

The National Tuberculosis Association has after a five years study given out some valuable statistics from which we quote:

The highest death rate from all causes, for working men, 15 to 64 years of age, was found among hostlers and stable hands, 36.22 deaths per thousand employed. The rate for garage laborers of the same age was only 6.65. The rate for operatives in harness and saddle factories was 30.55; for aviators, 28.73; for operatives in cigar and tobacco factories, 19.32, which was also the rate found for boatmen, canal men and lockkeepers. Sailors and deck hands had a rate of 17.28. These may be compared with school teachers, with a rate of 4.42, and social and welfare workers, with a rate of 2.75, or with the rate for all "gainfully employed males," aged 15 to 64 of 8.70 per thousand. In the public service, guards, watchmen and doorkeepers died at the rate of 20.25 per 1,000. Firemen showed a rate of only 6.71. General laborers in the public service had a rate of 7.15, but garbagemen were found to have an index of 11.39. The rate for postmasters was higher than that for mail carriers, the figures being respectively 11.00 and 6.10.

Other comparisons taken from the report are:

lawyers, judges, and justices, 7.89; physicians and surgeons, 10.69; clergymen, 10.33; cemetery keepers, 6.50; college president and professors, 2.69. Rates for laborers in the chemical and allied industries were low at 5.13, and laborers in soap factories, 3.29, while for inventors, the rate is 17.65 and for draftsmen 3.21. Managers and officials of real estate companies have a rate of 5.64, but for real estate agents it is 10.09. Chauffeurs and truck and tractor drivers, 6.19; draymen, teamsters and carriage drivers, 17.59; telegraph operators, 10.09, and telephone operators, 4.59.

The report, entitled "Death Rates by Occupation," contains eight thoroughly detailed and comprehensive tables, accompanied by interpretative comment. One of these tables shows death rates for various occupations by broad age groups according to cause of death. Suicides among lawyers, judges and justices are less than the average for all gainfully employed males included in the study; among doctors, suicides are greater. Unskilled workers kill themselves in greater proportion to their numbers than professional men, and agricultural workers less than semi-skilled workers in other pursuits. Tuberculosis takes it greatest toll among unskilled workers, whose rate is double the average for all workers; the rate for skilled workers is a little under the average; while professional men have a rate less than one-third of the average. After the age of 45, heart disease claims more than the average of professional men; but the rate for agricultural workers is only half the average, and unskilled workers again seem to get the worst of it from heart disease, with the highest rate, for both the 25 to 44 and 45 to 64 age groups.

Some of the other diseases for which detailed rates are given in the tables accompanying the report are: cancer and other malignant tumors; nephritis; cerebral hemorrhage; diabetes; cirrhosis of the liver and accidents.

The importance of the study is pointed out by Miss Whitney who says in the report: "Without accurate data as to the relative health risk of various occupations, no one knows where to expend the greatest effort in industrial health work. Each industry has come to realize that certain of its occupations are more hazardous than others. Employees in dusty trades, those usually exposed to high temperature or to excessive moisture, or to bad weather conditions generally, are among the workers subjected to the greatest risk. That a certain occupation may be hazardous may be a recognized fact. But how hazardous is it? How much more dangerous is it than other occupations in the same or other industries?"

Many difficulties were surmounted in obtaining the facts contained in the final report, which is based on data of the United States Census Bureau. The principal obstacle encountered was that the death certificates did not disclose occupations in a satisfactory manner for such a study. Another was the frequent discrepancy between the method of classifying occupations on death certificates and census returns, so that a comparison of the number of deaths with the number of persons employed in a given occupation was difficult. Beginning in 1929, an effort was made throughout the United States to obtain uniform reporting of occupations on death certificates, and it was found that ten states, for the year 1930, had their vital statistics in a condition to make studies of them significant. These states were: Alabama, Connecticut, Illinois, Kansas, Massachusetts, Minnesota, New Jersey, New York, Ohio and Wisconsin. The total population for these states comprised 38 per cent of all that for continental United States.

"Another difficulty inherent in studies of occupational mortality," states Miss Whitney, "is the tendency to change occupations on the part of workers whose health becomes impaired or who are growing old. The machinist who becomes a forester after he contracts tuberculosis, and the boiler maker who gets a job as watchman when he grows older, cannot be properly evaluated in any analysis based on census statistics. Only through the intensive study of small groups obtained by the sampling process can this tendency to change occupations be taken into account.

"Not only is one's chance of survival affected by the hazard directly inherent in the job, as in the case of metal filers and zinc miners, etc., but there is too the effect of social or economic status or of different standards of living, as implied by certain occupations. For example, the lowest rate from tuberculosis is found in the highest economic bracket, and the rates increase steadily through the other social-economic groups, (with the exception of agricultural workers) the highest tuberculosis death rate occurring in the lowest social-economic group."

MEDICAL ECONOMICS

As mentioned in the July article in this column, the subject of Health Insurance and Group Hospitalization was of great interest at the recent annual meeting of the American Medical Association held in Cleveland. The statement made in report of this committee at the last annual meeting of the Illinois State Medical Society at Springfield that there was considerable difference of opinion among medical men in regard to the proper stand to be taken by organized medicine was amply verified. To one who was not present at the meeting, but has read the published statements carefully, it seems that in all probability both the American College of Surgeons and the delegates to the American Medical Association, spoke a little hurriedly. However, it verifies the assertion that it is high time that the entire subject be carefully studied from all angles prior to making a definite decision and recommendation. This Committee in its annual report advised the formation of a special committee for this work, but those in authority did not see fit to follow that recommendation and instructed this committee to study the subject further. This we will try to do in the coming year, so that we may have a recommendation at the next annual meeting.

It is interesting to note that the delegates at Cleveland voted that so-called "Contract Practice" was unethical. This was in accordance with the action of the Christian County Medical Society last spring, when they expelled a member, who had been most active in this type of practice in a mining community in that county. The action of the Christian County Medical Society was reviewed at the last meeting of the Council and it was found that the action had been carried out in a legal manner and accordingly the action was approved. This is another of the real live problems of the medical profession and it is to be hoped that definite regulations as what can be done in this kind of practice will be decided on and placed in effect throughout the state. The definite action must be taken by the local County unit along the lines outlined by organized medicine, State and National, with the definite assurance that when their action is taken in the proper manner, the State Society and the A.M.A. will stand behind them.

Of course the danger of State Medicine is constantly in the thoughts of the thinking men of the profession, who are always on the alert for the first move of those reformers, the most of whom are outside of organized medicine, whose avowed purpose is the furthering of this movement. So serious has this become that the action of men outside the medical profession is viewed with at least suspicion every time they write in the lay magazines or burst into print in the front page of a daily paper, on medical subjects. The question of their sincerity is not subject to argument. And, of course, they are entitled to their opinion. However, they would object to having medical men tell them how their business should be conducted, as the recent experience with the NRA has verified. Coupled with this danger is the much greater one of politics. How to consider them separately is beyond our comprehension. We have all seen the effects of politics on business and it is terrifying to think of the entire medical profession of the State and Nation under the direct control of political appointees. The results have been so unsatisfactory in many other lines that we must be on the alert for the first move to bring medicine under political control. Possibly we are at times over-apprehensive and possibly prejudiced, but as long as we are watchful, we have a chance to recognize and combat such plans in their infancy.

E. S. HAMILTON, *Chairman,*
Committee on Medical Economics.

WHO EATS THE TAXES?

A press dispatch from Washington the last of December stated that more than six million men and women are now on Uncle Sam's payroll. This meant approximately one out of every twenty persons in the United States is living off the federal government. Now add to this six million the number of persons on the payrolls of states, cities, counties, towns, school districts, etc.—that is, persons who gain their living from funds secured through taxes—and you have a fair idea of why your income is near the zero mark.

To justify this enormous payroll, it will be claimed that it is a matter of emergency relief. But have these excessive expenditures been made because the people of the United States asked them, or because well organized, active, energetic and vociferous minorities urged them? Did you ask for them? Do you know of any of your neighbors who did? Your community is typical of all in this country. In truth, have not the demands for these excessive expenditures come from minorities who have imbibed freely of certain foreign theories?—*Committee on American Education.*

Correspondence

ANOTHER CHISELING INSURANCE COMPANY

To the Editor: In the August issue of the JOURNAL I read of an insurance experience of Dr. Beebe of Oak Park. I am now going through an experience with an insurance company which I think should be published.

I was called to an automobile wreck at 2 a. m. and found four injured persons, two of them had minor injuries and were dismissed within a few hours; one lady had a fractured clavicle and was in so much shock that I did not treat her until the evening of the day of the injury, other than to attend to the shock that she was in; the fourth lady had a fractured pelvis and was in so much shock that no operative procedures were inaugurated until about 48 hours after the accident, when I was able to determine that there was no injury of the viscera.

The party driving the car assured me the night of the injury that he had full coverage and insisted that we give the injured people every attention and that we would be remunerated in full by his Insurers. Some few weeks later an adjuster representing the Insurance Company which carried the risk, visited me and gave me the following information which was certainly news to me: that by a law in Illinois the Insurers are held liable only for the first twenty-four hours of medical or surgical service and that after that it is up to the doctor and the injured person.

When these injuries come in at the hour stated, the first thought of the surgeon and hospital authorities is to do what is deemed best for the patient and not to get out the policy and study it to see just where the limitations are.

In conversation with an official of the Insurance Company, I was further informed that the statement of the adjuster was correct. If this is a fact, I cannot see where the party carrying the protection has any benefits unless his accident results in an immediate death or a very trivial injury.

The lady with the fractured pelvis was hospitalized in the hospital of this city for six weeks for which services the Insurance Company allowed them $29.50. I have been informed that such payment as they made constitutes only the first twenty-four hours service and that they will make no further payment on the services rendered at the time.

I will appreciate it if you will run this in an early issue of the State JOURNAL as I have written it or pruned it down to where it gets the meaning across, at least. None of my brother physicians of this city knew of this situation until I ran into it. From the outlook of my experience, it seems as if we would be better off if we would disregard shock when some of these cases come in and operated immediately, which would be in most cases against our better judgment.

Thanking you in advance for such discussion as you give the matter, I beg to remain,

Cordially,

RAY B. ESSICK, M. D.

PHYSICIANS AND CASUALTY INSURANCE COMPANIES

Every physician in Illinois during the year gives the necessary care to injured employees of some concern which carries insurance on their employees. Adequate records of the cases must be kept, and both preliminary and final reports of the case must be submitted to the insurance company, then with the final report, the itemized statement of the physician for services rendered that particular case are submitted to the company.

It has been the experience of most physicians doing this type of work to have some claim adjuster or attorney for the insurance company write them stating that the bill presented is exorbitant, and must be reduced from 25% to 50% before it is paid, and frequently the statement is made that the correct charge for the services rendered are considerably less than the amount presented in the statement.

The Illinois Industrial Commission does not have a uniform fee bill governing these cases, and invariably the county medical society fee schedule must prevail. Quite recently in Illinois physicians who have protested at this action of the insurance companies have taken the case into court, filing suit against the employer who is responsible for this care, and when their fees as submitted for the services performed, are in accordance with the local fee schedule, judgments

have been rendered by the Court to sustain the charges.

A case of this nature was reported in the August JOURNAL where a physician treated an industrial case, received blanks from an insurance company which were filled out and returned, and after the case was released, a bill for services was submitted and a check for approximately one-half of the bill was submitted from the insurance company with a statement that the check was in conformity to fees generally charged by physicians for that type of work. The patient was sued in Justice Court, and the full bill was allowed. An appeal was taken and the higher court allowed the bill in full.

At the 1934 Annual Meeting of the Illinois State Medical Society held in Springfield, the Public Policy Committee in the annual report asked the approval of the House of Delegates to a change in the name of this Committee to the Public Relations Committee, and also suggested that their committee be empowered to aid the physicians in these cases where there is a controversy between the physician and the insurance companies relative to the bill for services in industrial cases. The requests of the committee were approved, and within a short time the Public Relations Committee will be ready to receive complaints of this nature from any member of the Illinois State Medical Society.

Physicians who do this type of work are entitled to their regular fees for services in all cases except those in which an agreement has previously been made relative to fees with the employer or the insurance company. The fees charged should be in accordance with the fee schedule of the community in which the physician lives, and preferably he should be able to show that it is entirely in conformity with the county medical society fee schedule.

The Illinois Industrial Commission contrary to statements frequently made by representatives of insurance companies, does not have a fee schedule governing the charges for caring for these cases. It is as ridiculous for a claim attorney to tell a physician what the correct fee should be for medical or surgical care, as it would be for the physician to tell the attorney what his correct fee should be in a legal case.

Every county medical society should have uniform fee schedules for the physicians in that particular county, and when controversies arise over a disputed bill, a copy of the fee schedule should be submitted to the Public Relations Committee for their guidance, and if at the time such copies are not available, statements from the President and Secretary of the County Society should be submitted to show that the charges are correct for that community.

The Public Relations Committee expects to be ready to receive complaints of this nature early in September, and will submit informative data to the members of the Illinois State Medical Society through the JOURNAL at an early date.

W. S. BOUGHER, *Chairman.*
GEORGE MICHELL,
CHAS. J. DRUECK.
Public Relations Committee.

INVITATION TO WISCONSIN

Meeting at Green Bay on Wednesday, Thursday and Friday, September 12 to 14, the State Medical Society of Wisconsin extends a very cordial invitation to members in adjoining states vacationing in Wisconsin to be guests at its 93rd Anniversary Meeting. All sessions will be held in the Columbus Community Club, Green Bay.

Morning sessions will be devoted to section meetings and clinical presentations with general sessions each afternoon. The President's Address will be given at a smoker Wednesday evening, September 12th, while Drs. Olin West, Secretary of the American Medical Association, and Dean Lewis, Baltimore, will address the annual dinner on Thursday evening.

WOMAN'S AUXILIARY
ILLINOIS STATE MEDICAL SOCIETY

The Board of the Woman's Auxiliary to the American Medical Association, Mrs. Robert W. Tomlinson of Wilmington, Delaware, President, will meet at the Hotel Pearson, Chicago on Saturday, September 22.

ADVISORY COMMITTEE FROM ILLINOIS STATE MEDICAL SOCIETY

R. R. Ferguson, M. D., 4013 Milwaukee Avenue, Chicago—Chairman.

John R. Neal, M. D., Springfield.

Charles J. Whalen, M. D., 25 East Washington Street, Chicago.

Harold M. Camp, M. D., Monmouth.

Charles B. Reed, M. D., 30 North Michigan Avenue, Chicago.

INTERNATIONAL ASSEMBLY OF THE INTERSTATE POST GRADUATE MEDICAL ASSOCIATION OF NORTH AMERICA

PHILADELPHIA, PA.

NOVEMBER 5, 6, 7, 8 and 9, 1934.

Pre-Assembly Clinics, November 3rd; Post-Assembly Clinics, November 10th, Philadelphia Hospitals.

Monday, November 5th

8:00 A. M.

Diagnostic Clinic: "Peptic Ulcer."

Dr. Edward J. Klopp, Professor of Surgery, Jefferson Medical College of Philadelphia, Philadelphia, Pa.

Diagnostic Clinic: "Tuberculosis of the Genito-Urinary Tract."

Dr. Hugh H. Young, Professor of Urology, Johns Hopkins University School of Medicine, and Director of the Brady Urological Institute, Johns Hopkins Hospital, Baltimore, Md.

Diagnostic Clinic: "Diagnosis and Treatment of Myxedema."

Dr. Cyrus C. Sturgis, Professor of Medicine, University of Michigan Medical School, and Director of the Thomas Henry Simpson Memorial Institute for Medical Research, Ann Arbor, Michigan.

Intermission for Review of Exhibits

Diagnostic Clinic: "Complications of Pregnancy."

Dr. John R. Fraser, Professor of Obstetrics and Gynecology, McGill University Faculty of Medicine, Montreal, Canada.

Diagnostic Clinic: "Hoarseness — Differential Diagnosis of the Manifold Diseases Accompanied by This Symptom" (Chalk Demonstration).

Dr. Chevalier Jackson, Professor of Bronchoscopy and Esophagoscopy, and Dr. Chevalier L. Jackson, Temple University School of Medicine, Philadelphia, Pa.

Noon Intermission

1:00 P. M.

Diagnostic Clinic: "Varieties of Goiter and Their Management."

Dr. Frank H. Lahey, Director of Surgery in the Lahey Clinic, Surgeon to the New England Baptist Hospital and New England Deaconess Hospital, Boston, Mass.

Address: "The Treatment of Chronic Constipation."

Dr. Frederick J. Kalteyer, Clinical Professor of Medicine, Jefferson Medical College of Philadelphia, Philadelphia, Pa.

Address: "Post-operative Complications."

Dr. Elliott C. Cutler, Moseley Professor of Surgery, Harvard University Medical School, Boston, Mass.

Intermission for Review of Exhibits

Address: "The X-ray Diagnosis of Various Pathological Conditions of the Small Intestine with Special Reference to Post-operative and Post-inflammatory Conditions."

Dr. James T. Case, Professor of Roentgenology, Northwestern University Medical School, Chicago, Illinois.

Address: "The Value of X-ray Therapy in Acute and Chronic Infection."

Dr. Willis F. Manges, Professor of Roentgenology, Jefferson Medical College of Philadelphia, Philadelphia, Pa.

Address on Ophthalmology.

Dr. John M. Wheeler, Professor of Ophthalmology, Columbia University College of Physicians and Surgeons, New York, N. Y.

Dinner Intermission

7:00 P. M.

Address: "The Surgical Treatment of Tumors of the Suprarenal Gland."

Dr. Waltman Walters, Associate Professor of Surgery, University of Minnesota, Graduate School of Medicine, Mayo Clinic, Rochester, Minnesota.

Address: "New Method of Ventriculography Through the Vault of the Orbit." "Final Recovery of the Facial Spasm After Plastic Reduction of Nervous Fibers."

Dr. A. M. Dogliotti, Professor of Surgical Diagnosis, Royal University of Torino; Vice-President of the International Society of Anesthesia; Member of the Reale Accademia di Medicina, Torino, Italy.

Address: "Qualitative Changes in the Neutrophilic Leucocytes, Illustrated with Natural Color Photomicrographs" (10 min.).

Dr. Russell L. Haden, Chief of the Medical Division, Cleveland Clinic, Cleveland, Ohio.

Address: "Certain Problems Presented by the Adolescent Period."

Dr. William Palmer Lucas, Clinical Professor of Pediatrics, University of California Medical School, San Francisco, California.

Address: "The Significance of Menopausal Bleeding."

Dr. Floyd E. Keene, William Goodell, Professor of Gynecology, University of Pennsylvania School of Medicine, Philadelphia, Pa.

Tuesday, November 6.

8:00 A. M.

Diagnostic Clinic: "Chronic Appendicitis and Diseases Which Simulate It."

Dr. George P. Muller, Professor of Clinical Surgery, University of Pennsylvania Graduate School of Medicine, Surgeon to the Lankenau and Misericordia Hospitals, Philadelphia, Pa.

Diagnostic Clinic: "The Simulation of Chronic Glomerulo-Nephritis by Conditions Not Primarily Renal."

Dr. O. H. Perry Pepper, Professor of Medicine, University of Pennsylvania School of Medicine, Philadelphia, Pa.

Diagnostic Clinic: "The Diagnosis of Primary Pituitary and Parapituitary Lesions."

Dr. Charles H. Frazier, John Rhea Barton Professor of Surgery, University of Pennsylvania School of Medicine, Philadelphia, Pa.

Intermission for Review of Exhibits

Diagnostic Clinic and Address: "The Basic Nature of Chronic Arthritis and the Principles Underlying Treatment."

A combined presentation by Dr. Robert B. Osgood, John Ball and Buckminster Brown Professor (Emeritus) of Orthopaedic Surgery, Harvard University Medical School, Boston, Mass., and Dr.

Ralph Pemberton, Professor of Medicine, University of Pennsylvania Graduate School of Medicine, Philadelphia, Pa.

Noon Intermission

1:00 P. M.

Diagnostic Clinic: "Post-operative Abdominal Fistula."

Dr. John F. Erdmann, Attending Surgeon to the New York Post Graduate Hospital and Medical School, New York, N. Y.

Address: "Recent Advances in the Treatment of Urinary Infection."

Dr. William C. Quinby, Clinical Professor of Genito-Urinary Surgery, Harvard University Medical School, Boston, Mass.

Address: "Chronic Duodenojejunal Angle Ileus."

Dr. Ralph C. Brown, Clinical Professor of Medicine, Rush Medical College, Chicago, Illinois.

Intermission for Review of Exhibits

Address: "The Treatment of Myomata—Operation and Irradiation."

Professor Dr. Hans Guggisberg, Professor of Obstetrics and Gynecology, Director of the University-Maternity-Hospital, Berne University, Berne, Switzerland.

Address: "The Management of Common Colds."

Dr. Perry G. Goldsmith, Professor of Oto-Laryngology, University of Toronto Faculty of Medicine, Chief Surgeon, Department of Oto-Laryngology, Toronto General Hospital, Toronto, Canada.

Address: "Present Status of Immunization Against Communicable Diseases."

Dr. John A. Kolmer, Professor of Medicine, Temple University School of Medicine and Director of the Research Institute of Cutaneous Medicine, Philadelphia, Pa.

Dinner Intermission

7:00 P. M.

Address: "Indications for and Types of Surgery in the Treatment of Duodenal Ulcer."

Dr. Roscoe R. Graham, Assistant Professor of Surgery, University of Toronto Faculty of Medicine; Senior Surgeon, Toronto General Hospital, Toronto, Canada.

Address: "Clinical Aspects of the Various Important Types of Constitution."

Dr. Lewellys F. Barker, Professor Emeritus of Medicine, Johns Hopkins University School of Medicine, Visiting Physician, Johns Hopkins Hospital, Baltimore, Md.

Address: "Technique of Pneumonectomy and Lobectomy" (10 min.).

Dr. William F. Rienhoff, Jr., Instructor in Surgical Anatomy, and Associate in Surgery, Johns Hopkins University School of Medicine, Baltimore, Md.

Address: "Diagnosis of Pancreatic Cysts."

Dr. Allen O. Whipple, Professor of Surgery, Columbia University College of Physicians and Surgeons, New York, N. Y.

Address: "Vascular Crises."

Dr. David Riesman, Professor Emeritus of Clinical Medicine, and Professor of the History of Medicine, University of Pennsylvania School of Medicine, Philadelphia, Pa.

Wednesday, November 7.

8:00 A. M.

Diagnostic Clinic: "Differential Diagnosis of Syphilitic and Non-Syphilitic Eruptions."

Dr. Frank C. Knowles, Professor of Dermatology, Jefferson Medical College of Philadelphia, Philadelphia, Pa.

Diagnostic Clinic: "Pain."

Dr. John M. T. Finney, Professor of Clinical Surgery, Johns Hopkins University School of Medicine; President of Inter-State Post Graduate Medical Association of North America, Baltimore, Md.

Diagnostic Clinic: "What Constitutes a Good History."

Dr. William D. Haggard, Professor of Clinical Surgery, Vanderbilt University School of Medicine; President, American College of Surgeons, Nashville, Tenn.

Intermission for Review of Exhibits

Diagnostic Clinic: "The Significance of Jaundice."

Dr. Henry A. Christian, Hersey Professor of the Theory and Practice of Physics, Harvard University Medical School, and Physician-in-Chief, Peter Bent Brigham Hospital, Boston, Mass.

Diagnostic Clinic: "Diagnosis and Treatment of Brain Tumors."

Dr. Walter E. Dandy, Adjunct Professor of Neurological Surgery, Johns Hopkins University School of Medicine, Baltimore, Md.

Noon Intermission

1:00 P. M.

Address: "The Surgery of Amelioration for Intractable Urological Lesions."

Dr. Joseph F. McCarthy, Professor of Clinical Urology, Executive Officer of Department of Urology, New York Post Graduate Medical School, Columbia University, New York, N. Y.

Address:

Dr. Paul Strassmann, Professor of Obstetrics and Gynecology, Medical Department, University of Berlin, Berlin, Germany.

Address: "Pregnancy Associated with Diabetes." "The Use of Cholesterol in the Treatment of Diabetes."

Dr. Elliott P. Joslin, Clinical Professor of Medicine, Harvard University Medical School, Boston, Mass.

Address:

Dr. William J. Mayo, Chief of Staff, Mayo Clinic, Rochester, Minn.

Intermission for Review of Exhibits

Address: "Problems Relating to Peritonitis."

Dr. Vernon C. David, Clinical Professor of Surgery, Rush Medical College, Chicago, Illinois.

Address: "Chronic and Recurring Diarrheas."

Dr. Robert G. Torrey, Professor of Medicine, Woman's Medical College of Pennsylvania, and Physician to the Philadelphia General Hospital, Philadelphia, Pa.

Address: "Fundamental Physiological Concepts Differentiating Arterial from Arteriovenous Lesions and Their Importance in Relation to Surgical Therapy. Clinical and Experimental Studies."

Dr. Emile F. Holman, Professor of Surgery, Stanford University School of Medicine, San Francisco, California.

Address: "Streptococcus Infections."

Dr. Warfield T. Longcope, Professor of Medicine, Johns Hopkins University School of Medicine, Baltimore, Md.

Dinner Intermission

Convention Dinner

Addresses by distinguished guests.

Thursday, November 8.

8:00 A. M.

Diagnostic Clinic: "Functional Disorders of the Gastro-Intestinal Tract."

Dr. Alfred Stengel, Professor of Medicine, University of Pennsylvania School of Medicine, Philadelphia, Pa.

Diagnostic Clinic: "Back Injuries."

Dr. John J. Moorhead, Clinical Professor of Surgery, New York Post Graduate Medical School; Executive Officer, Department of Traumatic Surgery, Columbia University, New York, N. Y.

Diagnostic Clinic: "Malignant Hypertension, Manifestations and Treatment."

Dr. Campbell P. Howard, Professor of Medicine, McGill University Faculty of Medicine, Physician to the Montreal General Hospital, Montreal, Canada.

Intermission for Review of Exhibits

Diagnostic Clinic: "The Curability of Carcinoma."

Dr. E. Starr Judd, Professor of Surgery, University of Minnesota, Graduate School of Medicine, Mayo Clinic, Rochester, Minn.

Diagnostic Clinic: "Pain in the Chest."

Dr. James H. Means, Jackson Professor of Clinical Medicine, Harvard University Medical School, and Chief of the Medical Services, Massachusetts General Hospital, Boston, Mass.

Noon Intermission

1:00 P. M.

Diagnostic Clinic: "Differential Diagnosis of Border Line Cases."

Dr. Hugh Cabot, Professor of Surgery, University of Minnesota, Graduate School of Medicine, and Consulting Surgeon at the Mayo Clinic, Rochester, Minn.

Address: "Gynecological and Obstetrical Applications of Endocrinology."

Dr. Emil Novak, Associate in Gynecology, Johns Hopkins University School of Medicine, Baltimore, Md.

Address:

Dr. Roberto Alessandri, Professor of Clinical Surgery, Medical Department, Royal University of Rome, Rome, Italy.

Intermission for Review of Exhibits

Address: "Diverticulitis and Carcinoma of the Colon with Special Reference to the Differential Diagnosis."

Dr. Ross Golden, Associate Professor of Medicine, Columbia University College of Physicians and Surgeons; Attending Physician, Roentgen Ray Department, Presbyterian Hospital, New York, N. Y.

Address: "The Treatment of Acute and Chronic Mastoiditis."

Dr. Fielding O. Lewis, Professor of Laryngology, Jefferson Medical College of Philadelphia, Philadelphia, Pa.

Address: "The Diagnosis and Management of Diseases of the Biliary Tract."

Dr. W. Wayne Babcock, Professor of Surgery, Temple University School of Medicine; Surgeon, Philadelphia General Hospital, Philadelphia, Pa.

Dinner Intermission

7:00 P. M.

Address:

Dr. George J. Heuer, Professor of Surgery, Cornell University Medical College, New York, N. Y.

Address: "Some Aspects of the Etiology, Diagnosis and Treatment of Anemia."

Dr. George R. Minot, Professor of Medicine, Harvard University Medical School; Director, Thorndike Memorial Laboratory; Visiting Physician, Boston City Hospital, Boston, Mass.

Address: "Certain Aspects of Surgery of the Large Intestine" (10 min.).

Dr. Richard B. Cattell, Lahey Clinic, Boston, Mass.

Address: "The Relation of the Endocrines to the Psychoses."

Dr. Louis J. Karnosh, Assistant Clinical Professor of Nervous Diseases, Western Reserve University School of Medicine, Cleveland, Ohio.

Address: "Intracranial Injuries of the New Born from the Standpoint of the General Practitioner" (Moving Picture Demonstration).

Dr. P. Brooke Bland, Professor of Obstetrics, Jefferson Medical College of Philadelphia, Philadelphia, Pa.

Friday, November 9

8:00 A. M.

Diagnostic Clinic: "Poliomyelitis."

Dr. John Claxton Gittings, William H. Bennett, Professor of Pediatrics, University of Pennsylvania School of Medicine, Philadelphia, Pa.

Diagnostic Clinic: "Diagnosis and Treatment of Urinary Calculi."

Dr. William E. Lower, Cleveland Clinic, Cleveland, Ohio.

Diagnostic Clinic: "Primary Carcinoma of the Lung."

Dr. Evarts A. Graham, Bixby Professor of Surgery, Washington University School of Medicine, St. Louis, Mo.

Intermission for Review of Exhibits

Diagnostic Clinic: "Polyglandular Disease."

Dr. George Crile, Cleveland Clinic, Cleveland, Ohio.

Diagnostic Clinic: "Pernicious Anemia and Leukemia."

Dr. Harlow Brooks, Emeritus Professor of Clinical Medicine, New York University and Bellevue Hospital Medical College, New York, N. Y.

Noon Intermission

1:00 P. M.

Diagnostic Clinic: "Differential Diagnosis of Tuberculous and Non-Tuberculous Infection."

Dr. Charles R. Austrian, Associate Professor of Medicine, Johns Hopkins University School of Medicine, Baltimore, Md.

Diagnostic Clinic: "Benigh Tumors of the Breast."

Dr. Dean D. Lewis, Professor of Surgery, Johns

Hopkins University School of Medicine, Baltimore, Md.

Address: "Recent Advances in Our Knowledge of the Thymus and Pineal Glands."

Dr. Leonard G. Rowntree, Director of the Philadelphia Institute for Medical Research; Clinician to the Philadelphia General Hospital, Philadelphia, Pa.

Address:

Dr. Charles H. Mayo, Professor of Surgery, Medical School, University of Minnesota and Graduate School, University of Minnesota (Mayo Foundation), Rochester, Minn.

Intermission for Review of Exhibits

Address: "The Treatment of Hirschsprung's Disease."

Dr. Fred W. Rankin, Lexington, Kentucky.

Address: "The Present Status of Surgery of the Sympathetic Nervous System."

Dr. Alfred W. Adson, Professor of Neurosurgery, University of Minnesota, Graduate School of Medicine, Chief of the Neurological Department, Mayo Clinic, Rochester, Minn.

Address: "Functional Nervous Disorders in Children."

Dr. Edward L. Bauer, Professor of Diseases of Children, Jefferson Medical College of Philadelphia, Pediatrist to the Jefferson Hospital, Philadelphia, Pa.

Tentative Foreign Acceptances:

Mr. A. Lawrence Abel, F. R. C. S., Surgeon Cancer Hospital, London, England.

Professor Mario Donati, Head of the Department of Surgery, University of Milan, Milan, Italy.

Dr. Ferdinand Sauerbruch, Professor and Head of the Department of Surgery, University of Berlin, Berlin, Germany.

THAT WHICH HELPS

Mrs. Robert W. Tomlinson

President Woman's Auxiliary to the American Medical Association

The meaning of the word "Auxiliary" is *"That Which Helps."* To my mind on these three simple words, particularly the last, depends the entire life fabric of this organization.

In order to help, we must first remember the organization of which we have the great honor to be a part, and must keep in mind, while we are but twelve years old, the medical profession has been carrying on for centuries, activated by ideals so high that, had the rest of the world lived by them, mankind would, in all probability, not be in the unhappy state it is today.

We must take into account that this profession is a highly trained and technical one and we are not in a position, individually or collectively, to speak for it except in ways which have been approved by the appointed advisors of our Auxiliary.

Having assured ourselves we understand this, we may then ask what we can do, and if we are truly sincere, we find the field of our opportunities is a wide and fertile one, which we can cultivate with great success.

We are the wives of the men of this great profession, which in itself is enough to give us adequate cause for thankfulness. We do not live as other women; we cannot help but know much of the sorrow in other lives, and yet we must never exhibit this knowledge to the outside world, and had the Auxiliary achieved nothing other than accord to us the friendship of all these other women who live similar lives to our own, we would be grateful to it for these understanding friends.

We, as women, belong to many organizations and are members of Boards where much of general interest is discussed, and we cannot be so affiliated without realizing the great amount of inaccurate medical and health information which is disseminated, and, in consequence thereof, we may let it be known that we are in a position to furnish speakers on Medical Subjects, who are authentic and whose positions are unquestionable.

It is possible to furnish such literature as the Study Envelopes and Hygeia, feeling as we do, that no one need apologize for the material supplied, as back of it stands the greatest Medical Body in the world. This relationship, particularly with other women's organizations, creates fast friends, and if zealously fostered, will engender a feeling of deep respect for that which we are endeavoring to accomplish, and the utilization of such instruments or agents, through our Public Relations Committee is perhaps one of the most inspiring opportunities we possess.

I should like to remind you that what we achieve is not attributable to our imagination, but to the recognized need for this work, by the American Medical Association itself. It is our great privilege to have the opportunity to assist in these ways. Give of yourself, but always with the knowledge that such effort is with the approval of your Advisory Committee.

You in the State of Illinois, have to a certain extent to evolve your own methods. Each State, naturally, exists under different conditions from its neighbor, but bear in mind that the entire National Organization is always at your service, with any help it may be able to offer. This is its duty and pleasure.

I close with a few words from a statement I made in New Orleans two years ago; you have read them before and simple as they are, I feel still the same about our aims and ideals, and I am sure that if we keep their meaning before us, we will continue on the right way.

"One great bond we have in common, one ideal that we hold highest among our earthly ones—the bond, that of participating in the practice of the noblest of professions; the ideal, that of using our services wisely in the interest of that profession and mankind, and proving ourselves true helpmates, both individually and collectively. Collectively we are a strong force which may be of much use in a quiet way to the medical profession. We who know the unselfishness of these men of ours, can do much to enlighten a frequently misinformed public about the true character of Medical work, and its plans for Public Health and Welfare. We can, in a non-aggressive way, offset much of the wicked propaganda constantly kept before an ignorant and deluded populace.

"With this in mind, let us use our time wisely, make our plans carefully, and thank God for the opportunity to be of service to this profession of which we are an honored part."

Original Articles

GENERALIZATIONS CONCERNING HEART DISEASE

ROBERT B. PREBLE, M. D.,

CHICAGO

The value of a generalization is proportionate to the mass and accuracy of the data upon which it is based. This statement carries the implication that is always fluid and subject to revision. While this is true, a generalization gives a breadth of view and a perspective which can be obtained in no other way. They may be compared to a contour map which gives information in three planes while the usual map gives information in only one.

If one omits from consideration the congenital heart lesions and those manifestations which, for want of a better term we may call neurocirculatory, heart lesions begin to appear at about three years of age, rare at this time, and for a time gradually increase. At the age of six or seven the rate of increase rises and continues to rise rather sharply until the age of puberty, when the rate slows somewhat. The maximum is reached at twenty, after which time this type of lesion rarely occurs as a fresh thing.

After twenty, this group of patients begin to die off, at first rather rapidly and then more slowly, but by forty-five practically all of them are dead, although occasionally they run over into the fifties, sixties and even the seventies.

At about forty another type of lesion begins to appear and this increases rather rapidly up to the age of fifty-five, when these patients, too, begin to die off and are practically all dead at the age of sixty-five, although they occasionally run over into the seventies. While they begin usually at about forty, they occasionally begin in the thirties, even in the twenties, and rarely in the teens.

The third form begins usually at about fifty and from there on it increases with great rapidity until by seventy practically all people are involved, at least pathologically, although they may show no clinical evidences. While usually beginning at fifty, they are not uncommon in the forties and are encountered even in the thirties and twenties. The youngest patient in this group that I ever saw personally was eleven.

If one looks at these curves which I have drawn you see there are three apices, at twenty, at fifty-five and at seventy, and while these apices are sharply separated from each other each one of the curves laps over onto each of the others. This lapping may be due to the mere fact that the lesion continued longer or began earlier than the average, but they also overlap because occasionally two types of lesion are seen in the same individual. Thus, the first lesion may be present in an individual who develops a second or even the third, or an individual with a second lesion may develop the third lesion.

It is obvious to you that the first type of lesion is the endocarditis, the second is syphilis, and the third the cardiovascular process.

Diverse as these lesions are, the etiological factors have one feature in common. They are always systemic and while the resulting permanent effects may be local, all organs of the body have been exposed. The first type is due always to the action of any one of a variety of bacteria, a blood stream infection with a port of entry which may be known or suspected.

The second type is also an infective process, due to the Spirochete, usually appearing about twenty years after the initial lesion but occasionally much earlier, even as early as the secondary period.

When one considers the etiology of the third group, one must confess almost complete ignorance. One can, if one likes, repeat in a parrot-like way the variously accredited etiologic factors, like alcohol, tobacco, red meat, salt, and the wear and tear of these strenuous days, but as a matter of fact none of these factors is based upon accurate observation. Indeed, I think most men who have given this group of cases thoughtful consideration, will agree with me that none of these factors is really potential. What lies back of these changes is, to my mind, the most important question before the medical profession today. Not so much because of the great increase in their frequency but because of the much more disturbing factor that these vascular changes are appearing earlier in life and that one is now seeing frequently in the fifties and in the forties, changes which twenty-five years ago we rarely saw except in the seventies and in the sixties.

Read before Section on Medicine at the annual meeting of the Illinois State Medical Society, Springfield, Illinois, May 17, 1934.

I have no opinion as to what these causal factors are, but it would seem reasonable to suspect that they are factors which have entered into our lives within the last twenty-five or thirty years, and there are four factors which have so entered and which appear to me as possibly potential.

It was about forty years ago that we first began to use foreign proteins in the way of sera, vaccines and otherwise, and it is possible that these vascular diseases are remote effects of such use.

Secondly, it was about forty years ago that the pediatricians began, by their increased knowledge and skill, to save many a child who a few years before would have died of inanition or malnutrition. Now, it is possible that those children, carried through their infancy and childhood, are the ones who are now dying of senile changes at forty.

Thirdly, it was at about this same period that the American youth developed the mania for strenuous exercise and that, too, may be a factor. Every one of you will recall among your friends athletes who died too young from vascular sclerosis.

A fourth possible factor which began about this same period and has increased greatly is the use of the automobile which, by contaminating the air with carbon monoxide and other gases, may favor the development of these changes.

The essential point of contrast between these three groups of cases is that endocarditis is a disease of the heart and only twice in its course does it become a factor in the causation of disease elsewhere in the body. That is, during the acute stage bacteria may easily implant themselves in other places in the body and grow there. Or, more frequently, bits of clot may be detached from the diseased valve and float through the blood stream until some vessel is reached the caliber of which is less than the diameter of the clot. The importance of such infarcts is determined mainly by their location, and in part also by their size. There are many places where an extremely small infarct may give rise to serious or even fatal disturbance, while even large infarcts locating, as they so frequently do, in the spleen or the kidney give rise only to temporary disturbance. Once the inflammatory changes in the valve are healed, that individual may go for years in health and comfort, and no changes will be found in the organs remote from the heart until the period finally arrives when the cardiac reserve becomes insufficient and the picture of a broken compensation develops. That is, endocarditis is strictly a disease of the heart.

The second group of cases, the syphilitic, is also due to infection, but the cardiovascular syphilis rarely appears until many years after the onset of the infection. It, however, differs from the endocarditis in that the lesions are never confined to the circulatory apparatus. There are always lesions elsewhere and one has to do not with a cardiac disease but with a systemtic disease. It may easily happen that the cardiovascular element for long will overshadow everything else, but in many cases the realization that one has to do with a systemic disease will lead to the discovery of lesions, even serious lesions, which the patient and his friends have not suspected. That is, one will frequently find associated with the heart lesion a locomotor ataxia, a general paresis, syphilis of the liver, syphilis of the long bones and so forth.

When we turn to the third group, the etiology of which I have so frankly confessed I do not know, we have reason to believe that this process is not of infectious origin, even though we do not know the cause. It is a process which also is widespread throughout the body, even though the complaints of the patient may be strictly vascular. Every organ in the body has undergone some changes, and while the patient may present himself originally as a cardiovascular case within a few weeks or months, he may be renal, or he may be apoplectic, or he may develop a gangrene of an extremity, or any one of numerous possibilities all of which are merely different aspects of the same process.

While it is possible for an endocarditis, healed and quiescent, to remain stationary for years at a time, the cardiovascular cases tend always to progression, and the rate of progress is not even, sometimes more rapid, sometimes slower. Furthermore, the changes may increase in one set of organs while they remain stationary in another.

To review these three types of cardiovascular disease, the first either causes death in the course of a few weeks or months or may end in so complete a recovery that the individual goes on for years, leading a normal active life. Syphilis tends to progress, but does so less slowly than

one might expect, while the last form—which will come to all of us provided we live long enough—tends always to progression. When it comes to the recognition of these various types of lesions, and of course I cannot on an occasion like this go into any detail, I shall for convenience contrast first the endocarditis and the arteriosclerosis and take up the syphilis last.

Endocarditis begins as an infection, with the ordinary infective phenomena; temperature, sometimes chills, alteration in the blood picture, and frequently the presence of bacteria can be demonstrated in the blood stream. There may or may not appear evidences of infarcts in any place in the body. If the patient is to recover, these infective phenomena gradually and slowly decrease and finally disappear, and we have left a series of physical signs upon which, and upon which only, we base our diagnosis.

When the patient presents himself, as they most often do, after the period of acute infection is over, the history of the patient is of no consequence whatever so far as the diagnosis of the lesion is concerned. The history is of importance only by giving us a clue to the possible infecting agent, to the duration of the lesion, and to the completeness of the compensation. Their subjective feelings are of no value as an aid to diagnosis.

In contrast with this group is the arteriosclerotic, and to his story every attention must be paid, for in a great many instances it is upon the story that you make your diagnosis and not at all upon what you find physically. Indeed, if you disregard the story in many of these individuals your physical examination shows nothing. The heart being of normal size, both upon percussion and upon the orthodiagram, the vessels which are palpable or visible showing no change, the blood pressure being well within normal range, both systolic and diastolic, the urine being entirely normal, you might easily dismiss the individual with the assurance that he is in sound condition unless you listen to his story, when complaints of oppression, of cardiac pain, easy exhaustion, winter cough, and many other in themselves trivial incidents become gravely suggestive.

Another important contrast between these two groups of cases is that if you fail to recognize the existence of an endocardial lesion, no great harm is done. Far less harm is done to fail to recognize the lesion than to say that a lesion exists when it doesn't. Indeed, I think there is no graver error in the handling of cardiac cases than to tell a young person that he has a heart lesion when he hasn't. If you make a diagnosis of heart lesion in youth, you must be in position to prove the existence of the lesion before any competent jury. If, however, you tell an old man he has a heart lesion and he hasn't, no great harm is done. You merely are giving him a tangible reason for leading the kind of life which an old man ought to lead. With the old man you never have to prove that the lesion exists. If there is dispute about it, you have to prove that it doesn't exist.

In a word, the diagnosis of endocarditis is based purely and solely upon physical signs while in the old man the diagnosis is based primarily on the story and only secondarily upon the physical findings.

Now, it is an interesting thing that syphilis, which in these groups occupies the intermediate position, is diagnosed in part on the story and in part upon the physical findings. In the endocardial group, instrumentation such as the orthodiagram and electrocardiogram rarely add anything to our information. They are an important aid in cases of cardiovascular syphilis and are essential in the vascular sclerosis cases.

When it comes to the question of prognosis in these three groups, in the first group the prognosis is always uncertain during the period of the acute infection, and it is uncertain not only as to the outcome but also as to the duration. Weeks or months may go by without any material change in the picture and then, for reasons which we do not know, improvement sets in and such recovery as is possible results. After recovery from the acute infection the life of the individual is dependent very largely upon circumstances. If he has a wise doctor and a cooperative parent who has some money it is possible for such a child to go on for many years and lead an astonishingly active life. If, however, there are neither dollars nor sense around the child has a poor show. He will be subjected to exertion for which he is unfit, he will be educated for an occupation which he is physically unable to live up to. Were it possible to always supply intelligence and money for these children life would be much prolonged.

These children when they come to death die of one of two causes. Either the valves become

reinfected and they die of an acute endocarditis, or they die from a broken compensation—rarely from the first break. Indeed, usually they will survive three or four breaks.

It is not always easy to recognize an acute reinfection of the endocardium. The febrile phenomena may be very slight. Repeated blood cultures may be negative, but whenever one encounters an old endocardial lesion which has a break in compensation, which persists in spite of adequate rest and proper medication, one should always suspect that the valves have become reinfected even though you may not be able to prove it until the patient reaches the autopsy table.

In the second group, the syphilis, the outlook is not so favorable. These patients rarely last even though the disease is recognized early for more than five or six years, although sometimes they will go longer than that, even ten or fifteen years, but generally the course is short. Furthermore, they very frequently end with spectacular rapidity, dying in a minute or two, either with the picture of an angina pectoris, or sometimes, as a ruptured aneurism. It is my conviction that the prognosis is less favorable now than it was twenty-five or thirty years ago, because the diagnosis is so much more frequently made and the patients are handled as syphilis, which is said to be a curable disease, rather than as heart cases.

Now, turning to the third group, the arteriosclerotic, the prognosis is very uncertain because so many of the incidents of life which cannot be anticipated, and therefore cannot be prevented, become serious accidents. For example, a man starts across the street and makes a quick jump to get out of the way of an automobile. That sudden strain may be enough to precipitate a fatal angina, or so thoroughly break his compensation that it cannot be restored. Or the old man goes to a friend for dinner, has a nice dinner which agrees with all the other guests, but precipitates in the old man an indigestion which in its turn precipitates an angina. Or, the old man goes out to play golf and instead of selecting a slowly moving companion and a level course plays with somebody a good deal younger and over a course that is too hilly, and the combined influence of these two precipitates an angina. Or, he gets angry with his children and the emotional disturbance precipitates an angina. But if the angina doesn't occur so easily he subjects himself to exertion which will bring on a break in his compensation, and one must remember that the cardiac changes are only one part of a complex picture and that death may come to him by the renal route, or by the cerebral, or by any one of numerous ways. It is, however, possible with this group, as with the first group, to prolong life greatly and increase the comfort greatly if one can have dollars and sense, both of which are so frequently lacking. If these old people would only travel in the middle of the road, avoiding extremes of all sorts—and they should not forget that there are extremes of two kinds. An old man may drink too little alcohol just as well as he may drink too much. He may take too little exercise just as readily as he may take too much, although much too likely to go to the second extreme than to the first.

Now, in closing, let us contrast the general principles and treatment of these three groups. It is to be regretted but must be admitted that during the acute period of an endocarditis we have no means by which we can combat the infection. The day may come when we will have but at present we have nothing. It is only by maintaining the nutrition and the general care of the patient that one can accomplish anything, and even here our accomplishments are not ponderable. Once the infection has subsided, and fortunately in many of these cases it does subside, the subsequent care is important. The disappearance of the fever and the leukocytosis doesn't mean that the exudate upon the valve has undergone organization. That requires weeks and months of time, and by keeping these children quiet and in that way lessening their heart rate we facilitate recovery and reduce, probably, the amount of scar tissue. After that period has gone, life should be planned for the child not at the lowest physical level but at the highest physical level of which he as an individual is capable, and every effort should be made to encourage the child to do as much as he can do without discomfort, and an intelligent eye should be on him all the time to detect the first evidence of overexertion in order that a period of rest may be prescribed. During the many months and often years of this stage no medication is necessary, and particularly should one avoid the too widespread practice of giving digitalis because a heart lesion exists. The value of digitalis during the periods of break in compensation has been dem-

onstrated by so many thousands of observations that no one can dispute it. One should, however, always use a properly standardized preparation in a dose determined by the weight of the individual.

I have already indicated my belief that the cardiovascular syphilis has now a higher mortality and a shorter course than formerly, and this I believe is due to the fact that effort is made to cure the syphilis. This cannot be done. The use of the arsenicals, bismuth and even mercury, hastens the process of the disease rather than slows it, it weakens the aortic wall rather than strengthens it, and I am satisfied that were the use of these drugs discontinued and the old method of using fifteen or twenty grains of iodide over long periods of time resumed it would lead to a prolongation of life, although it would not cure any more individuals.

When it comes to the third group, the etiology of which we do not know, but which is certainly a part of senescence, one must admit that efforts at correction of the etiologic factor are impossible, and one is forced to resort very largely to the management of the individual's manner of life, the avoidance of excesses, the middle of the road, quiet and peace, and as near happiness as you can provide.

Within the last few years the use of various theobromines has gradually, and I think justly, increased, so that for a number of years I have put all these patients on some one of the theobromines. I also provide that each one shall never be more than an arm's reach away from a bottle of nitroglycerine, in order that he may have as effective a drug as he can personally use in provision for the accident which you cannot anticipate, which you cannot prevent, and which fortunately doesn't always occur. Morphine, so useful in the cases of coronary thrombosis, of course cannot be safely put in the hands of very many individuals. That must be used by the doctor himself.

30 North Michigan Avenue.

DISCUSSION

Dr. Don C. Sutton, Chicago: I do not expect for a moment to add a word to the generalizations that Dr. Preble has covered so perfectly. The sole topic of discussion seems to be what is the cause of arteriosclerosis? I would like to call attention to some of the difficulties in making studies of the etiology of arteriosclerosis. Foreign proteins, gas from motors may be factors. Within the last two years in Germany there has been some work with automobile exhausts on rabbits, the results of which seem to prove that it does cause arteriosclerosis. Dr. Longcope in 1912 found that he could produce arteriosclerosis and cirrhosis of the liver by injecting foreign protein into dogs. A number of workers with rabbits have found that they were able to produce arteriosclerosis by diets.

The important thing, however, is the value of such experimental work. Rats and rabbits in captivity have a tendency to spontaneously develop arteriosclerosis very early. It is impossible to evaluate such research work because of this spontaneous development of arteriosclerosis. We have to take with a definite grain of salt all the experimental evidence that is offered. I do not mean that some of this work may not be on the right track, but it is extremely hard to evaluate experimental work on animals.

In young individuals it has been my impression that arteriosclerosis develops during infection, like long-continued subacute bacterial endocarditis. Apparently there is a possibility of infection playing a part in the early sclerotic.

Dr. A. A. Hayden, Chicago: I would like to say a word of appreciation of this very interesting presentation of Dr. Preble. It is the best talk on the subject that I have heard for many a day. It is apparent that everyone dies with heart disease, not necessarily of heart disease. In the classification of things that have happened that have shot the curve of heart disease up—gas, foreign protein, etc.—it seems to me that one thing has been left out, namely, the increase in self-medication.

WHITHER GOEST THOU?

CHARLES G. FARNUM, M. Sc., M. D.

PEORIA, ILL.

"No conception can be interpreted except through its history."

Nor is it necessary for us to penetrate the remote history of medicine and rake over the mouldy past, to interpret the trend of present day medicine or the changed attitude of the public toward it.

If we restrict ourselves to a period within the memory of most of us, we find that during those few years the field of medical practice has changed, that medical practice itself has changed, that the attitude of the public toward it has changed.

In this relatively short space of time encroachments on the medical field have come from every quarter and the perpetrators of these encroach-

Read before Secretaries Conference at Annual Meeting of Illinois State Medical Society at Springfield, May 15, 1934.

ments have multiplied in number and in the boldness of their attacks until many lay individuals and various organizations of alleged philanthropic character now brazenly insist on complete and extraneous regulation or control of the practice of medicine. The threat is openly made that the day is not far distant when the public will demand free treatment of all its ailments by tax supported institutions.

Nor are such demands inconceivable for we already have the U. S. Public Health Service, the U. S. Veterans Administration, the Emergency Relief Administration, state institutions for the insane, county and municipal sanatoriums for the tuberculous and county and municipal hospitals for general medical care.

We are often accused of being ultra-conservative when we protest against our profession being socialized or supervised by laymen. We are called obstructionists and stand-patters. It is a favorite argument frequently used that we as physicians are not conversant with social science and its fundamental principles. That assertion is not true! Social science has no more profound students and no more intelligent ones than the men of medicine. We are familiar with its fundamentals, we are informed as to its development and progress and we acknowledge its sphere of usefulness. We know that social evolution is as positive as biological evolution.

But we also know that evolution in any field is a slow and time consuming process with many interruptions and many set-backs. We know that medicine has reached its present high plane through two thousand years of painstaking and laborious development, tenaciously adhering to a strict and honorable ethical code. We know that developmentally, medicine was a stalwart intelligent biped with mature judgment when social science was still leaping from tree top to tree top in the jungles. We are also aware of the capriciousness of human behavior complexes. We know the difference that exists between individual psychology and mass psychology and the impossibility of predicting human reactions with any degree of certainty. We know that but a few things are really settled in the social world and those not permanently.

Therefore, if medicine, in its process of evolution, is to become more and more socialized, we insist that that socialization shall come from within. It must come as a gradual growth and through its own leaders who are heirs to the inspiring traditions and ideals of a glorious past and are fully conversant with its present status and its future needs.

In times of economic turmoil it is characteristic of mankind to become panic stricken, to lose sight of fundamentals, to miss the real essence of things and to turn to anything that is new and different, regardless of its irrelevancy, its inappropriateness or its incongruity. It is a matter of history that following every economic depression there has been a veritable flood of plans, legislative and otherwise, to correct existing conditions. Some may have helped. Many have certainly hindered.

At the present time the dominating idea is to mechanize, standardize and supervise everything from industry to charity and from many sources it is insisted that even the practice of medicine shall be thrown into the maelstrom of this all-inclusive plan. Medical service is to become a public utility, like electricity or telephones. It is to be put on a plane of mass production and the principles of big business are to be applied. It is to be conducted, not for the best interests of the sick, but for the profit of those who employ its practitioners. The doctor is to become the hireling of a lay organization. His status is to be that of a switchman or a machinist.

As an argument for this central control of things we are asked to look at what government regulation of business enterprises has accomplished. We are asked to behold the codes of proper business conduct that have been written almost over night for all industrial, commercial and financial pursuits. We are told with much pride that some of these codes of business are almost six months old and are still alive, albeit a bit sickly.

On the basis of this decidedly meager knowledge and almost no experience it is proposed that we physicians shall cast aside our code of ethics that has developed to its present height in a gradual and orderly manner over a period of 2000 years. We are requested to ignore the contemporary history of medical practice in many European countries where similar plans are in effect with disastrous results to both patients and doctors. We are asked to abandon the accomplishments of 20 centuries of development and prog-

ress and to treat patients like so many pieces of material to be put through a shaper or a punch press.

All this may sound like good business but it is bad medicine.

A tree cannot reach maturity in a day and a code of ethics cannot develop over night. Both require time and gradual growth to reach a sturdy and useful maturity.

Medicine is a science and an art Its function is to relieve suffering and prolong life. It deals with the health, happiness, longevity and usefulness of human beings. It deals with the human equations of human individuals, no two of whom are alike in physical, mental, moral or spiritual make-up. It does and must continue to treat the patient as well as the disease. It must care for the ailing as well as the ailment. It must not overlook the individual when it views the masses. It must see the trees when it looks at the forest. It presupposes the individual care of the individual patient by the individual physician and if medicine is to continue its march forward the intimate, confidential, individualistic relationship between physician and patient must be maintained.

In spite of the efforts of many laymen and some physicians to classify it otherwise, medicine still remains a profession of the very highest type. It is not a mere business. Its ancient foundation and its modern superstructure have been built for the relief of the sick and suffering and by that very token it stands on a vastly higher and wholly different plane than business and is not amenable to the application of so-called business methods.

As a matter of fact, it is the attempts on the part of those outside the profession to insinuate these very business methods into the realm of medicine, that are responsible for much of the economic difficulty that now besets the profession and which causes us to pause and ask of medicine, "Whither Goest Thou?"

With lay organizations, philanthropic and otherwise, appropriating whole areas, with hospitals and charity clinics taking over large tracts, with insurance companies, industrial and business organizations and fraternal orders absorbing additional territory, with the various cults abstracting a huge province and most extensive of all, that gigantic expanse usurped by the municipality, the county, the state and the federal government, the inroads into the field of medicine are so multitudinous and the territory taken away from the field of medical practice is so great that unless the present trend of things can be diverted and the innumerable menaces to our professional field can be overcome, then the answer to that question, "Whither Goest Thou?" is not a pleasant thing to contemplate.

In the light of its immediate history the conception as to whither medicine is going may be clearly interpreted and readily comprehended.

Its field is being rapidly narrowed by the inroads of extra-medical organizations. Its practitioners are being discredited, replaced and proselyted. It may be safely said that the present time is probably the most critical in the whole of medicine's economic history.

The problem then, is clear; but what is the answer to the problem? The diagnosis is plain; but what are the remedial measures to be applied?

In every condition of grave emergency, whether it be economic in the body politic or pathologic in the individual, a most heterogeneous aggregation of remedies is always prescribed.

Such is the case in the present eemrgency in medicine. Contemporaneous medical literature is filled with therapeutic measures, ranging from the idealistically sublime to the utterly ridiculous. Everyone who is consulted and everyone who is not, has a suggestion to offer until in this maze of divergent opinions we are forced to wonder if the astute old Sydenham did not have the vision of prophecy when he said, "The efficacy of the treatment of any diseased condition is inversely to the number of remedial measures that are advocated as a specific cure."

Nor is it strange that there is such divergence of opinion, for we are too close to the picture for clear vision. Our perspective is bound to be somewhat blurred. Moreover the stress of the whole thing is too great for profound meditation and clear thinking. Yet the working out of this problem must have profound meditation and clear thinking coupled with a wealth of common sense, a lot of militant activity and most courageous leadership.

No intelligent person who has studied this situation either as an abstract subject in Social

Science or as an acute personal problem would have the temerity to suggest any new procedure for its solution. There are no new procedures to suggest. But out of the mass of suggestions that have been offered we may select certain pertinent ones for further development.

For every problem has certain fundamentals underlying it. To be a problem at all it must be founded on certain undeniable and unalterable premises, and such is true with ours. So long as mankind exists we will have sick and injured individuals to be cared for and so long as sick and injured individuals exist the men of medicine will furnish that care. And since through long development ours has become an individualistic type of intelligence and our work an individualistic type of work, we contend that that work presupposes the individual care of the sick or injured by individual physicians. Mass medicine cannot care for mass humanity satisfactorily.

It would seem then, if we are to preserve the place that we have wrought for ourselves in the scheme of things, if we are to further develop those individualistic propensities that are peculiar to the study and practice of medicine, unhampered by lay or political control, if we are to continue our scientific, economic and social progress, if our initiative and our opportunities are not to be curtailed, if we are to maintain our identity and continue as a profession then out of the labyrinthine maze of proposals that have been offered for our salvation, we must select those two essential elements as representing the gist of our enigma and make them the objectives of our efforts. Both are pertinent and relevant because they are the two basic and unalterable premises of our problem—the one who requires medical care and the one who is to provide that care.

Therefore our first and probably our most important objective is the proper education of the patient and the potential patient. And practically every human being is a potential patient since sooner or later he will require medical care.

The public is receptive to information on health matters as it never was before. For the first time in its history it is taking its health seriously. It is health conscious. It listens with eagerness and reads with avidity. It is happy to be informed and it is going to be informed. If it does not get proper information from us it will get improper information from some other source.

For that reason the work of our Educational Committee has a value and an influence that is inestimable and incalculable. Countless thousands hear or read the health educational matter that it sponsors. Its work has grown to where it is now one of the really great functions of the Illinois State Medical Society and it is the hope of each one of us that means can be provided for further broadening the field of its splendid work.

But unfortunately we are not alone in the distribution of information to the public on the subject of health. The propagandists and the advertisers are also informing this same public, and they are much more numerous and vastly more aggressive than we are. They possess no ethical code to keep them within bounds and often exhibit utter disregard for truth and common decency. They are seriously confusing those who are earnestly seeking authoritative information on matters of health. All too often these people cannot distinguish propaganda and cheap advertising from real health education and they suffer accordingly.

Here is where the individual doctor can be of inestimable influence and help. His very position as medical advisor gives him a certain authority and his statements concerning what his patient has heard or read have weight. He must be the educator of the patient and his family as well as their diagnostician and therapist.

For after all, the finest and most efficient education is individualistic. The one who said the most effective institution of learning he had ever known was Mark Hopkins on one end of a log teaching a boy on the other end of that log, was not far from right.

People can be informed en masse, they can be instructed in groups, they can be taught collectively. But real education requires the activating spark of dynamic personality and necessitates individual contact. Possibly this is the reason we encounter so many well informed but poorly educated graduates of some of our large institutions of learning.

The doctor must be constantly in touch with what organized medicine is doing in the instruc-

tion of the public. He must even be familiar with what the cults and the advertisers are telling that same public, in order that he may augment the one and contradict the other and thus fulfill his destiny as the final educator of the individuals who constitute the masses.

The second objective in our efforts at self protection and the preservation of our profession from the assaults of the arrogant, aggressive and ruthless forces that menace us and our future, is the unification of our entire professional membership in this worth while cause. We must all be held together by the cementing influence of a common purpose, the cohesive force of a united aim.

Battles of this kind can not be won single handed nor by small groups. Nor can they be won by those who sit on the side lines or remain at home in cold indifference. Nor does the shouting of invectives or the writing of diatribes assist in any material way.

Our relations with our patients must be individualistic but our relations with each other must be group relations for the menaces that are inimical to our highest interests and threaten us and our profession are group menaces and can be successfully campaigned against only by group action of the most unified character.

There are 4000 registered physicians in Illinois who are not members of this Society. Those doctors are probably not unaware of the problems that medicine faces nor of the effect that the solution of these problems will have upon society in general and upon them personally. But as isolated individuals they are helpless and by remaining outside they are neglecting the one golden opportunity for united action in a common cause for the common purpose of self protection and self preservation.

In this state there is but one opportunity for unified effort against the vicious practices and systems that beset us; there is but one place where we can act as a collective group in our own behalf; there is but one organization in which the potentialities of medical strength can be converted into kinetic energy and utilized and that is the Illinois State Medical Society, with its 7000 members.

If the problems that confront medicine are ever to be solved it is to organized medicine that we must look for the solutions. There and there only do we find leaders with a clear and comprehensive knowledge of these problems, crystallized out of the varied experiences and opinions of the present and the past; leaders with clear vision and high ideals, tinctured with conservatism and common sense as they plan for the future; leaders who realize the challenge of the times and accept that challenge with courage, resourcefulness, intelligence and faith; leaders who, if we work whole heartedly with them, will lead us to a place where we can justify the faith that humanity has always had in doctors.

Many years have passed since an erudite French physician said, "If ever the human race is raised to its highest practicable level intellectually, morally and physically, the science of medicine will perform that service."

I beseech thee then, that ye render unto medicine that which belongs to medicine, that there may be given unto medicine an opportunity to perform that service.

DISCUSSION

Dr. Thomas P. Foley, Chicago: To me, Dr. Farnum's paper reiterates and emphasizes the necessity of a compact unified organization. The potential strength of the physicians of Illinois, if every eligible one were a member of the Illinois State Medical Society, is unlimited. Their energy used in a common direction could achieve any goal set for accomplishment. The good the Lay Educational Committee of the State Society has done in furnishing approved apostles of medical thought and information to the lay people of the state through newspapers, talks to lay groups, and over the radio, cannot be estimated. Its value is measured by the return engagements and by the continuance of radio broadcasting.

What the members of the Illinois State Medical Society can do through organized effort has been demonstrated by the Legislative Committee of the State through its chairman, Dr. John Neal, a past president of the Society. Under his guidance and energetic leadership the onslaughts of cults and isms have repeatedly been defeated. This active co-operation of the members, extended in all directions, is the keystone in avoiding the pitfalls as clearly shown by Dr. Farnum. If "eternal vigilance is the watchword of liberty" then eternal vigilance and action is the watchword for the protection of medical practice as it relates to physicians and their private patients.

THE FACILITIES FOR TEACHING LEGAL MEDICINE TO STUDENTS IN CHICAGO

S. A. LEVINSON, M. D.

AND

C. W. MUEHLBERGER, Ph. D.

From the Cook County Coroner's Laboratory
and
Department of Pathology & Pharmacology,
University of Illinois College of Medicine.

CHICAGO

We wish to report briefly the facilities in the City of Chicago that can be utilized by students of medicine and physicians in the study of legal medicine. The University of Illinois College of Medicine,—and that applies to other medical schools in Chicago as well,—is so situated that cooperation may be had from non-medical organizations which are engaged in attempting to solve the problem of crime or control it. These consist of the local and state police organizations, the office of the coroner, various sociologic al agencies and the local psychiatric investigators.

The University of Illinois College of Medicine is rather fortunately situated in this respect. In the immediate proximity are the Cook County Hospital with its divisions of pathology and psychiatry, the Cook County morgue with its medico-legal postmortem rooms, inquest rooms and laboratories for chemistry, toxicology and pathology functioning through the office of the coroner; the Institute of Juvenile Research, including the state criminologist and a staff of psychologists, psychiatrists and social workers. Within a short distance is the Northwestern University crime detection laboratory which specializes in the more unusual aspects of criminal investigation such as the identification of guns and bullets, the detection of deception, microscopy of hairs, fibers, etc., documents, examination and the use of ultra-violet light in investigational work.

On the second floor of the Cook County morgue are located the autopsy rooms for medico-legal autopsies and a suite of rooms for toxicological examinations, not only of material submitted from autopsies in cases of poisoning or suspected poisoning, but also the material obtained from patients such as stomach washings, hair and nails, urine and blood, and various drugs for toxicological investigation. Approximately 1787 bodies are investigated yearly by the coroner's office in the Cook County Hospital and about 4790 bodies are examined by the coroner's physicians in the various districts in Cook County. This material, either from autopsy or from other sources submitted for toxicological examination may be utilized for teaching purposes as well as for investigative work. With the aid of the associate institutes of psychiatry, of juvenile research, the crime detection laboratory, and the state criminologist, the value obtained from the respective investigations may also be used for further study.

Our students, until a few years ago, received practically no training or information concerning legal medicine, apart from that received in the course of Medical Jurisprudence, which is often entirely different from that of Legal Medicine. We have in the last few years attempted to utilize the physical equipment that is at our disposal to familiarize not only the student, but the physician as well, with such knowledge as he may utilize in his contact with patients who die as a result of violence; and to acquaint him with the laws governing the dead human body. Deaths which require investigation are those due to murder, either by bullet or knife wounds and strangulation, suicide by the latter methods as well as by poisons, hanging, or drowning; accidental deaths as by automobile, railroad, fire, etc., as well as death following injury while at work, abortions, and infanticide. The coroner's office is also called upon to investigate so-called sudden deaths, that is deaths due to natural causes without medical attention.

If we but center our attention for the time being, around the medico-legal unit of the Cook County Hospital, we should like to briefly sketch just what happens when a patient 1. is injured and brought to the Cook County Hospital and dies some time after injury, or 2. a patient dying before being admitted to the Cook County Hospital, or 3. a patient who may be admitted to the Cook County Hospital on suspicion of poisoning, and dies some time after admission to the County Hospital. In the latter case, the stomach is washed and the contents are submitted to the toxicologist for examination, or urine or blood may be collected for toxicological investigation and, as in the case of arsenical poisoning, the

Read before section on Public Health at Annual Meeting of Illinois State Medical Society, Springfield, May 16, 1934.

hair and fingernails are submitted to the toxicologist for study.

In the event of death, either as a result of bullet wounds or some other violent means, the body is taken to the autopsy rooms and an external examination of the body is made and the findings recorded. A description is made of all external signs of violence, entrance and exit bullet wounds are described and the height and weight, color of hair and eyes of the person is also recorded. The examination of the teeth, tattoo marks, scars or other marks of identification, has helped in many instances the identification of missing persons. A complete autopsy is then performed and the description of the organs is made and recorded in a special autopsy protocol. In some cases it is necessary to make histological examinations of one or more organs, particularly in cases of abortion. It was found necessary on several occasions to make bacteriological examination of heart's blood or fluid removed from the dead person. If the organs are to be submitted for toxicological examination there are put in special receptacles which are chemically clean.

If, in the event of a gunshot wound, the missile is recovered, the bullet is labeled and placed in an envelope which is properly sealed and a description made on the outside of the envelope, and this is then submitted to the ballistics department of the coroner's office for bullet identification.

It is sometimes necessary for the Bureau of Identification to make photographs of the dead body either at the scene of the accident or at the County morgue, and also fingerprint tests of certain individuals are made.

When the material is to be submitted for toxicological examination, as a rule the stomach and its contents, the liver, kidneys, and urine are removed. The urine is collected in a separate receptacle which has been thoroughly cleaned. The organs which are to be submitted for chemical examination are placed in chemically clean mason jars which have been covered, sealed, and labeled and given in person to the toxicologist or one of his assistants. A record is made of the patient's name and address, the date of autopsy, the age, pathological diagnosis, approximate length of illness if that is known, and the material which is submitted for chemical examination as well as a request for any specific test wanted. In cases of carbon monoxide poisoning the blood is submitted for chemical examination, and this is collected in chemically cleaned bottles which are properly corked and sealed. In cases of alcohol poisoning, aside from the usual organs and urine which are sent in for chemical examination, it is found necessary to submit parts of the brain for toxicological study. The coroner's chemist then examines the material submitted immediately after it is given to him or he places it in an icebox, which is under lock and key, and he may examine the contents at a subsequent time. At the end of the examination a written report is submitted to the physician who has performed the autopsy and to the deputy coroner who conducts the inquest, and one copy is kept on file in the coroner's office.

An inquest is held to determine by what means the individual came to his or her death and to attempt to establish the circumstances which resulted in death. The police at times will submit various bottles containing different kinds of drugs that may have been found in the room of the dead person and may have some bearing as to the nature of the death, and these are submitted to the toxicologist for examination. Guns, knives, ropes, various other appliances that may be found on the dead person, or that may have been removed from individuals suspected of having some knowledge of this crime are submitted for further investigation. This may consist of examination of fingernail scrapings for tissue, fibers, hair, blood stains, handwriting, fingerprints, and ballistic examination of guns and bullets. A suspected individual who may have knowledge of the crime, or is supposed to have some knowledge of the crime, may be submitted to the state criminologist, or to the physician in charge of the behavior clinic which is attached to the criminal court of Cook County for questioning; and recently the lie detector has been made use of in attempting to determine deception. We merely mention a few of these points in order to emphasize how various bodies functioning in and about the Cook County Hospital may be called upon to assist the state in solving crime.

The average physician or interne is possessed of very little knowledge as to what constitutes a coroner's case; who should be notified and what

materials are to be collected and saved; how evidentiary material should be handled. Such questions are constantly being asked not only by medical students, but by internes and physicians as well.

We believe that because of the increasing industrial hazards, because of the large number of accidents that occur in our active cities today, the question of legal medicine is becoming a more important one than would be indicated by the attention that has been given to it in the past. We wish simply to again call attention to the facilities which are available in the City of Chicago for the physician to utilize, not only in improving his knowledge concerning the subject of legal medicine, but also to familiarize himself with the various bodies that cooperate in attempting to solve crime. Such information is extremely valuable because it may avoid embarrassing circumstances, such as when a physician is called upon to testify as to his knowledge concerning the cause of death of a certain individual that he has seen, and is unable to give the proper information desired. The knowledge that one may gain from a study made in the various institutions in Chicago which are interested in the study of crime, may assist the physician not only in Chicago but in smaller communities so that he may properly make such necessary investigations which he may later in turn submit to the state which will help solve the mystery. We believe that the personnel of the various organizations in Chicago would be willing to cooperate and assist the physicians in better preparing themselves in the subject of legal medicine. Several times during the year special courses may be arranged for certain groups of doctors, and individual visits to these institutes may be made at almost any time. The men in charge

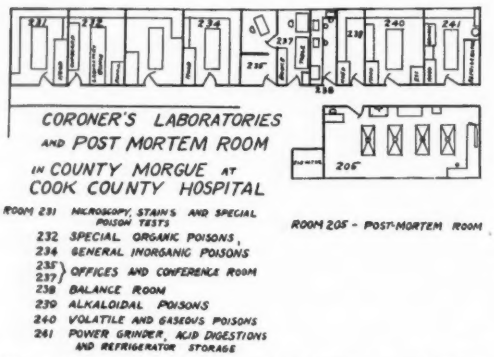

CORONER'S LABORATORIES
AND POST MORTEM ROOM
IN COUNTY MORGUE AT
COOK COUNTY HOSPITAL
ROOM 231 MICROSCOPY, STAINS AND SPECIAL POISON TESTS
232 SPECIAL ORGANIC POISONS,
234 GENERAL INORGANIC POISONS
235 } OFFICES AND CONFERENCE ROOM
237 }
238 BALANCE ROOM
239 ALKALOIDAL POISONS
240 VOLATILE AND GASEOUS POISONS
241 POWER GRINDER, ACID DIGESTIONS AND REFRIGERATOR STORAGE
ROOM 205 - POST-MORTEM ROOM

Fig. 1, Floor plan of Coroner's Laboratories and Postmortem Room in County Morgue at Cook County Hospital, Chicago, Ill.

TABLE I.—TOTAL NUMBER OF CASES HANDLED BY THE CORONER'S OFFICE IN COOK COUNTY FOR 1933.

Month	Inquest	Inquest Autopsies	Certificate	Certificate Autopsies	Total
January	295	94	230	10	525
February	261	75	246	8	507
March	318	111	210	20	528
April	336	120	209	22	545
May	376	139	241	26	617
June	335	132	213	25	548
July	358	92	191	12	549
August	348	123	192	14	540
September	328	106	179	19	507
October	355	89	248	39	603
November	318	102	199	33	517
December	344	86	247	25	591
Total	3972	1269	2605	253	6577

TABLE 2.—CORONER'S CASES HANDLED BY RESIDENT PATHOLOGIST AT COOK COUNTY MORGUE DURING PAST YEAR

MONTH	TOTAL CASES	AUTOPSIES
1933		
May	160	92
June	146	83
July	142	58
August	141	63
September	113	48
October	165	73
November	154	74
December	157	61
1934		
January	171	54
February	140	52
March	135	61
April	163	69
Total	1,787	788

TABLE 3.—TOXICOLOGICAL ANALYSES MADE IN COOK COUNTY CORONER'S LABORATORY DURING PAST YEAR.

Month	Postmortem analyses in Coroner's cases for all of County Coroner's Pathologists.	Antemortem analyses of vomitus, stomach washings, urine, blood, hair, nails, feces, etc., in cases of suspected poisoning at Cook County Hospital.
1933		
May	56	63
June	30	32
July	32	56
August	26	59
September	27	55
October	37	64
November	44	55
December	44	37
1934		
January	44	42
February	31	33
March	42	42
April	44	37
Total	457	586

are always ready to answer any question or questions which the physician may be interested in. It is also hoped that a closer cooperation may be brought about between the lawyers and the law governing bodies, and the medical and scientific aspects of crime detection, so that the legal and the medical end may function as one unit.

SUMMARY

A brief outline has been given of the facilities which are available in the City of Chicago for the study of legal medicine. It is recommended that physicians avail themselves of the opportunity of becoming more familiar with the various phases of crime detection as well as information from autopsies on medico-legal cases. The facilities in Chicago for teaching legal medicine are made available to the medical students so that they may apply the information that they have learned concerning legal medicine when they become internes, and later when they become practicing physicians, not only in large cities but also in small communities.

It is recommended that a closer cooperation be brought about between the legal profession and the medical profession so that a better functioning unit will exist which will aid the state and the people in helping to solve crime.

COW'S HORN FOR FIXATION OF FRACTURES: ITS STIMULATING EFFECT ON CALLUS FORMATION AND A SIMPLIFIED TECHNIC

EDSON B. FOWLER, M. D.

EVANSTON, ILL.

Only a very small proportion of fractures require open reduction and not all of these need internal fixation. Few open reductions were done prior to the advent of aseptic surgery and though since then great strides have been made in bone surgery, present results leave much to be desired. Frequently plates break, screws pull out, infection occurs and occasionally non-union. I set about therefore to find a better material and a simpler technic. Cow's horn was found to be strong, elastic, readily sterilized, and inexpensive. If absorbable, non irritating, and a stimulating factor in callus growth, it would seem to be an ideal material for the internal fixation of bones.

Read before Section on Surgery at Annual Meeting of Illinois State Medical Society, Springfield, May 15, 1934.

After various experiments on dead bones, I tried cow's horn on living dogs. The results were so satisfactory namely, prompt, abundant callus with union and with considerable absorption of the horn within 90 days, that horn was employed on nine patients requiring open reduction with fixation. In all of these nine cases prompt abundant callus and bony union occurred without complications.

Because in the above nine cases, where horn had been used, there had been decidedly more callus formation than in a similar series of ten cases with internal fixation in which metal was used, I reviewed the literature in an effort to find an explanation for the apparent stimulation of callus formation when horn was employed.

Ackroyd and Hopkins[1] pointed out that cysteine which is abundantly available in horn, is essential for growth. Hammett and Reimann[2] showed that cysteine stimulates growth by causing increased mitosis. In their work on plants and animals, they demonstrated the stimulating effect of cystiene in markedly increasing the cell multiplication. Brunsting and Simonsen[3] of the Mayo Clinic treated with cysteine a varied assortment of ulcers, mostly chronic which had resisted treatment. They noted that cystiene stimulated growth of granulation tissue and proliferation of epithelial cells, and brought about a diminution of discharge with a clearing of secondary infection. Also bacterial growth seemed to be inhibited.

E. Dahl-Iversen[4-5] in a series of experiments on rabbits and guinea pigs, used horn as an internal fixation material. His conclusions were that horn did not retard bony union: that new formation of bone from the periosteum was much greater with horn than without it in the control animals. However he did not recognize horn as a stimulant to cell growth.

Hedri[6] reported experiments with glue (knochenleim) and stated that it produced adhesions and callus rapidly. In 47 cases out of 950 fractures, liquid glue was poured on the ends of exposed bones. Callus set in within a surprisingly short time. In old pseudarthroses cases, liquid glue was injected in and about the false joint. Here again in the glue was available cystiene an essential stimulus to cell growth.

Three other men have used cow's or goat's

horn in a total of 21 fracture cases obtaining good union in every instance without complications. Prof. B. Mish of Russia tried horn on three cases and suggested its use. Lexer in Germany stated among other things, that horn was abundant, easily sterilized, strong, slowly absorbable, non-irritating, and finally a stimulant to periosteal and endosteal growth. His clinic reported nine cases with the use of horn each successful with no complications.

Boliarsky[7] used horn in nine cases, eight of which were old non-unions with pseudarthroses with more or less bone defect. Each case united; the bone defects were replaced with bone. He ran a series of nine control cases in which autogenous bone grafts were employed with no better results. He says in comparing the horn cases with the autogenous bone graft series, that his conclusions were that horn was the ideal material to use.

Horn[8] can readily be made into rods, pins, plates, etc. I employ horn in the rod form, either round, triangular, or quadrilateral, straight or curved, depending on the type of fracture and bone involved. For example, in fracture of both bones of the forearm, either single or multiple, the triangular rod tends to prevent rotation of the fragments. The elasticity also of the horn, in this difficult type of fracture, is very helpful in holding the radius and ulna well separated and consequently a good result both functionally and anatomically is assured.

Technic in brief: An incision is made somewhat to that side of the fracture selected for the drill hole. A good sized hole is carefully drilled through the cortex into the medullary channel a distance of one to three inches from the fracture. The hole is then reamed very obliquely toward the fracture so that the horn can be passed or gently driven through the obliquely reamed hole along the medullary canal well beyond the fracture. Usually the medullary spaces will require some reaming before the horn can be passed into the medullary canal and well beyond the break. The distance necessary will vary from one to several inches depending upon the size and length of the bone involved.

In the 30 cases including my own where horn has been used for internal fixation of fractures, it seems to have been an ideal material for strength, elasticity, absorbability, and ease of sterilization. In addition it was found to be non-irritating, mildly bactericidal and stimulating to callus growth. The simplified technic is relatively easy to perform, saves time and diminishes trauma and shock.

St. Francis Hospital.

BIBLIOGRAPHY

1. H. Ackroyd and F. G. Hopkins: Biochem. Jour., 10: 551-576, 1916.
2. F. S. Hammett and Stanley Reimann: Protoplasm, 7: 297-322, 1929; ibid 13: 331-347, 1931; also Jour. Exper. Med., 50: 445-448, 1929.
3. Louis A. Brunsting and Daisy A. Simonsen: Jour. A. M. A., 101: 1921-2008, 1933.
4. Dahl-Iversen, E.: Arch. f. klin. Chir. Berl., 165: 345-356, 1931.
5. Dahl-Iversen, E.: Arch. f. klin. Chir. Berl., 158: 680-684, 1930.
6. Hedri: Zentralbl. f. Chir. Leipz., 58: 1394, 1931.
7. N. N. Boliarsky: Vestnic. Chir., 9: 244-245, 1927.
8. Horn Peg Specialties, 1009 S. Main St., Princeton, Ill., or Surgical Supply Houses.

DISCUSSION

Dr. Fred W. Slobe, Chicago: Dr. Fowler's excellent presentation, in addition to advocating the use of a promising material in the internal fixation of fresh fractures, opens up an especially interesting trend of thought in connection with the operative treatment of non-union.

Today, I believe, the favored method of internal fixation for non-union is some type of autogenous graft. Of course, there are certain essentials in all operations for non-union such as the thorough excision of all fibrous tissue, complete freshening of the bone ends, accurate reduction, fixation, and subsequent immobilization. These essentials will often effect a cure in the simpler instances (caused, for example, by interposed tissue, unsatisfactory reduction, or incorrect primary management) no matter what type of material is used for internal fixation and sometimes without any internal fixation whatever. The more serious type of non-union, however, the typical pseudarthrosis, is that in which, for reasons unknown, there is a physiologic inertia or deficiency in the reparative processes in the tissues of the host. This may occur in healthy persons with a fracture accurately reduced and correctly treated. Autogenous grafts have superseded other methods largely because of their stimulating effect on these essential reparative processes. But in the adult, autogenous grafts have little viability; indeed, instead of any appreciable bone growth from them, bone grows into them by a process of "creeping substitution," while they are re-vascularized from the adjacent tissues, the bone of the original graft gradually degenerates. Because autogenous grafts are amenable to such substitution and absorption, however, and because they have some stimulating action on the adjacent tissues, they are generally preferred to the inorganic and non-autogenous fixation materials. The use of the autogenous graft, however, prolongs the time of the operation, causes considerable additional local trauma, and demands a degree of skill not always possessed by those performing bone surgery. The use of the electrical

saw is not without danger to the tissues of the patient, not mentioning the surgeon and his assistants. All of these factors may tend to increase the likelihood of subsequent infection. The simpler the operation perhaps the better, providing the requisite essentials are carried out.

In the future, no doubt, more attention will be directed toward solving the unknown factors responsible for the inertia of the reparative function in these troublesome instances of non-union and less attention to the exact type of internal fixation employed. In the endeavor to stimulate repair without open operation various methods have been employed; some have injected blood into the site of the old fracture; others have advised multiple drill holes into the fracture site; two surgeons in Paris have advocated the injection of a colloidal suspension of chalk and silica, claiming increased callus formation thereby; and, as Dr. Fowler has mentioned, Hendri of Budapest has advocated the similar injection of glue. Dr. Easton of Peoria has used glue with quite satisfactory results. It is questionable, of course, whether such methods could suffice in instances of true pseudarthrosis. It suggests, however, that if a repair stimulating substance could compose the material used for internal fixation we might be approaching the ideal combination. Horn, advocated by Dr. Fowler, seems to have these qualifications, as it is absorbable, non-irritating, and seems definitely to stimulate callus production.

Cysteine with its sulphydryl radical has been shown to be markedly stimulating to tissue proliferation in sluggish wounds and ulcers. Bone is not a highly specialized tissue being merely a differentiated tissue of mesoblastic origin. Bone repair does not occur by direct outgrowth of bone from bone and while true metaplasia of bone in non-bony tissue rarely occurs, the soft tissues at the fracture site play a vital role in bone repair and are closely linked with the reparative mechanism. It is not illogical to assume that a substance which stimulates tissue repair elsewhere might stimulate tissue reaction in old fractures. Horn, composed largely of keratin which in turn contains cysteine with its sulphydryl radical should have this effect and Dr. Fowler's experimental and clinical investigations clearly indicate its definite osteogenic value.

The technic is simple. There is a minimum of time and trauma. The incision is planned according to which end of the bone is selected for the aperture. Periosteum is not stripped up, the bones are handled relatively little, and only a few simple instruments are required. A typical instance of pseudarthrosis of the tibia, which I operated upon recently, using this method, shows abundant callus production although it is too early to evaluate the final result.

Dr. Fowler is to be congratulated upon bringing this procedure to our attention and I am sure it merits and will undergo extensive use.

Dr. Rupert M. Parker, Chicago:

In the last February number of *Surgery, Gynecology and Obstetrics,* Dr. Mumford of Indianapolis states that he found described in literature sixty-two varieties of internal fixation of fractures, and he added a sixty-third of his own. Now comes Fowler with a sixty-fourth method. We should always gladly welcome a new device which is an improvement over the old.

The cow's horn consists of two parts, a core or pith of cancellous bone and a shell or cortex covering it. The powder horns used in connection with the old muzzle-loading firearms were fashioned from these shells.

The cortex is of cardboard-thinness at the base and gradually thickens toward the tip of the horn, where it reaches a thickness of one-fourth to one-third of an inch. This material can be readily cut into pegs, rods and nails with a jack-knife. Heating the horn in boiling water facilitates the cutting.

While assisting Dr. Fowler in the laboratory I have often remarked the ease with which the horn could be applied to internal fixation, and I have speculated as to whether the virtue of the device lay in the simplicity of the method or the dexterity of the operator. I feel sure that both play a part, but that anyone schooled in other methods of internal fixation will find this one surprisingly simple and efficient.

Some methods of internal fixation, such as that of the famous Lane plate, require specialized and costly apparatus. The few instruments needed for cow horn fixation can, in emergency, be assembled at the cost of a few cents in any cross-road hardware store.

Cow's horn is exceedingly tough, and I cannot recall ever seeing a piece break. It holds the fragments in good apposition, but its flexibility and elasticity allow more or less movement of the fractured ends, and that stimulation may contribute to callus formation quite as much as the cysteine.

Dr. Dwight Clark, Evanston: I would like to ask Dr. Fowler whether he uses the horn in suppurative non-unions.

Edson B. Fowler (closing the discussion): As to the use of horn in an infected field, in reply to Dr. Clark, I have had no experience. Probably horn would be quite as satisfactory in the presence of infection as autogenous bone. The horn splint inserted as already described, is easy to apply and gives a very satisfactory internal fixation. The elasticity of the horn aids in its application, lessens the liability of further fracturing the bony fragments and in the forearm with both bones broken, the elasticity aids materially in holding the radius and ulna well apart.

My method of fixation (cortico-medullary) requires a minimum of trauma and it employs the surgeon's and his assistants' hands well away from the immediate open wound. The fingers are busy applying retractor, drill, reamer, bone elevator and bone holding instrument. Thus hands are not tempted to touch directly either bone or soft parts. In this way danger of infecting the operation is greatly reduced.

THE ROLE OF THE HYPOPHYSIS IN THYROID SYNDROMES

HUGO R. RONY, ASSOCIATE IN MEDICINE
Northwestern University Medical School
CHICAGO

The existence of an interrelationship between the hypophysis and thyroid has been recognized for many years. This interaction has been roughly expressed as "synergistic," meaning that each of these glands has a stimulating effect on the other. Important progress has been made recently in the physiology of this relationship by the demonstration beyond doubt of the so-called thyrotropic hormone of the anterior lobe of the hypophysis. It has been found that extracts of the anterior lobe are capable of preventing atrophy of the thyroid gland following hypophysectomy in experimental animals. It has also been found possible to produce, by daily intraperitoneal implants of fresh anterior lobe tissue, in normal guinea pigs, the entire syndrome of chronic hyperthyroidism including high basal metabolic rate, exophthalmos and the macroscopic and microscopic picture of "toxic goiter."[1]

These experimental findings cannot fail to influence our clinical views on the etiology, pathology and therapy of thyroid syndromes. It appears that syndromes of hypo- and hyperthyroidism may be due to deficiency or hyperactivity in the production of the thyrotropic hormone of the anterior lobe. Accordingly it will be necessary to differentiate between primary and secondary thyroidism. In primary thyroidism the original pathology is in the thyroid gland; if signs of disturbance of other endocrine glands occur, they are due to the effect of the abnormal thyroxin supply on the function of other glands. In secondary thyroidism, the original pathology is in the hypophysis; the disturbance of the thyroid gland is due to an abnormal supply of the thyrotropic hormone of the anterior lobe; glandular signs other than those due to the thyroid disturbance are caused by simultaneous involvement of other functions of the hypophysis.

The necessity of making a similar distinction has long been recognized in cases of sex gland disturbances. Thus in anomalies of menstruation it is a routine procedure to search first for pathology in the genital organs. In absence of local pathology, the case is then interpreted as "functional disturbance," with the assumption that it depends on some disturbance in the production of the pituitary sex hormones.

It must be admitted that with our present incomplete knowledge of the interrelationship of the endocrine glands, a differential diagnosis between primary and secondary thyroidisms cannot be made in every case. But an effort to establish a diagnosis will be worth while for several reasons. In the first place, by collecting a number of cases of clear cut primary thyroidism and comparing them with a group of cases of clear cut secondary thyroidism, we shall learn more about the mutual effects of thyroid and pituitary and shall be able to utilize this knowledge in the interpretation of cases of thyroidism in which the primary pathology is obscure. In the second place, our therapeutic efforts should benefit by a correct differential diagnosis. It is clear, for instance, that we cannot expect complete results from thyroid therapy in a case of secondary (pituitary) myxedema; in fact, such therapy is illogical and probably harmful. We shall concentrate our efforts, in these cases, on the hypophysis. Finally, the recognition that it is necessary to differentiate between primary and secondary thyroid disturbances may lead to the development of special diagnostic methods for this purpose. It is possible that the demonstration of the presence or absence of the thyrotropic hormone in the blood or urine of "thyroid" cases will enable us to localize the disturbance in practically every case.

In this paper, cases of thyroid syndromes, such as "myxedema," "cretinism," "hyperthyroidism," are described and, on the basis of closer analysis, interpreted as secondary thyroidisms of pituitary origin. An attempt is made to demonstrate the usefulness of such interpretation in actual cases.

1. *Case of "myxedema."*—Mr. A. H., 43 years old, has four children. Family history unimportant. He had enjoyed good health until two years ago, when he noticed a gradually increasing consciousness of fatigue, weakness, drowsiness, and lack of mental concentration. He lost all his body hair, including the pubic hair. His sexual impulse was entirely lost. A diffuse swelling developed in hands, feet and eyelids. He did not perspire, even in hot weather. He had lost all his teeth in the past 10 years, most of them in the past two years, because of pyorrhea and caries. His weight was 220 lbs. two years ago; he had lost 60 pounds in the past two years. He had frequent headaches. Examination showed a fairly

Read before Section on Medicine at Annual Meeting of Illinois State Medical Society, Springfield, May 16, 1934.

well nourished man with a hard, diffuse swelling of the skin of hands, feet and face, dry skin, brown pigmentation of the skin on face and palms, and almost complete lack of body hair. The penis was of normal size, but both testicles were smaller than normal and soft. No thyroid gland could be palpated in the flabby neck. There was a moderate exophthalmos with positive Graefe sign. The blood pressure was 90/65. B.M.R.

Fig. 1. Case 1. "Myxedema."

was minus 31%, blood sugar 66.8 mgm. %. The specific gravity of the urine was 1.015; albumin and sugar negative. The blood contained 4.4 million red blood cells, 85% hemoglobin; white cell count 8800. Wassermann reaction in blood negative. The muscles of the extremities were flabby; his grip on the dynamometer registered 25 to 33 mm (normal muscle power 90 to 100 mm). X-ray films showed a sella turcica of normal size and outline. The fundus of the eyes and the visual fields were normal.

He told us that some time previously the diagnosis of myxedema was made by a physician, and dried thyroid gland was prescribed, which made his condition worse; his headaches became more severe, he lost weight more rapidly, had constant palpitation of the heart and became so weak that he was unable to walk. He reported the same effects after taking gr. i thyroid substance daily for a week as prescribed by us.

A few weeks later while under our observation, he returned with a new complaint, polydypsia and polyuria. The 24 hour amount of his urine then was 4.5 to 6 quarts with a specific gravity of 1.005 to 1.003. This polyuria was relieved by hypodermic injections of pituitrin and returned when these injections were discontinued. Powdered whole pituitary gland by mouth in large amounts—gr. 30 to 40 daily—had an unmistakable effect on his chief complaint, the muscular weakness. The patient, who previously was so weak that he had to be assisted when he wanted to stand up, soon returned to his job as a private chauffeur. His grip then registered 70 to 80 on the dynamometer. He gained weight rapidly, 8 pounds in the first 10 days, the myxedema of the skin disappeared, and the blood pressure rose to 120/80. When he discontinued the treatment, the extreme weakness, loss of weight and other symptoms returned within a short time. However, after he had continuously taken large amounts of the gland for three months, he remained in fairly good condition for almost half a year without any medication. There was no effect at any time on the basal metabolism, on the sexual power, or on the hair growth.

Interpretation. The tentative diagnosis of idiopathic myxedema due to thyroid deficiency seemed on first consideration to be quite justified in this case. All the symptoms, signs and laboratory data appeared to be consistent with this diagnosis. Slight discrepancies, such as the rapid loss of weight and the intolerance to even small amounts of thyroid substance, were considered simply as "unusual features." No particular importance was ascribed to the exophthalmos, as it is known that occasionally exophthalmos develops with myxedema following removal of a toxic goiter.[2] However, the appearance of a typical diabetes insipidus could not be easily reconciled with this diagnosis. Neither was it a satisfactory assumption that two entirely independent diseases — myxedema and diabetes insipidus—existed simultaneously in this case. It remained then to consider the possibility of a primary atrophy or sclerosis in the region of the hypophysis, causing both diabetes insipidus and the "myxedema" syndrome. The latter then is really a summation of thyroid, gonadal, and adrenal insufficiencies due to deficient production of the specific anterior lobe hormones. The remarkable effect of pituitary therapy on some of the symptoms in this case appears to support this interpretation.

There are several interesting minor features in this case. One is the lack of beneficial effect of thyroxin combined with intolerance to it. We have observed this in several other cases of secondary hypothyroidism of pituitary origin, in contrast to primary hypothyroidism, where thyroxin is usually better tolerated and gives good results. This difference in response to thyroxin, if proved to be characteristic for the two types, may yield a valuable clue both to the diagnosis and the pathogenesis of these conditions.

Another interesting experience in this case is the beneficial effect of powdered whole pituitary gland by mouth. It is known that the thyro-

tropic and gonadotropic anterior lobe hormones are inactive when given by mouth. However, the effect of oral pituitary medication on the muscle power and blood pressure in our case suggests that the adrenotropic hormone may be absorbed by the gastrointestinal tract.

Finally, the myxedematous changes of the skin in a case of hypothyroidism of pituitary origin deserve comment. They show that even this sign is not exclusive for primary hypothyroidism. We have seen myxedema of the skin in another case of pituitary hypothyroidism, which too was tentatively diagnosed as "idiopathic myxedema," until

Fig. 2. Case 2. "Sporadic Cretinism." Before and six months after beginning pituitary treatment.

x-ray films disclosed a greatly enlarged sella turcica with bone destruction, and examination of the visual fields showed bitemporal hemianopsia.

2. *Case of "sporadic cretinism."*—Miss T. B., 16 years old. Family history unimportant. Physical and mental development extremely slow since early childhood. Began to talk at 2½ years. Had scarlet fever at 6. Present complaint: Physical and mental underdevelopment; amenorrhea. Height and general appearance that of an 8 year old child. Height 51.5", weight 70 lbs. Extremities relatively short, trunk long, head large, bridge of the nose depressed. Dull, cretinoid expression of face. Skin dry; body hair, including axillary hair and pubic hair, absent. Teeth irregular with marked spacing of the upper central and lateral incisors; six deciduous teeth still retained. The breasts undeveloped. External genitals infantile. Thyroid gland not palpable. Blood pressure 95/65. Hands rather large, cold and livid, nails poorly developed. Intelligence quotient .69, indicating a mental age of 11 years. X-ray films of the wrist showed marked delay in ossification. The sella turcica larger than normal without bone destruction. Frontal sinuses absent. No radiological evidence of a persistent thymus. B.M.R. minus 30.3%. Glucose tolerance normal.

Course and therapy. Powdered thyroid gland was prescribed, gr. ii daily. This was changed after two weeks, to gr. i daily, because of tachycardia, tremor, and nervousness. She continued to take gr. i thyroid for 6 months and has grown 1.5," with no change otherwise. A year later re-examination showed no change, except that she had grown 0.75". The anterior pituitary-like hormone of pregnancy urine (Antuitrin S, Parke-Davis) was then given in daily hypodermic injections, 600 rat units per week. After three weeks she exhibited marked development of the breasts and of the external genitals, pubic hair appeared, and she had a normal menstruation lasting four days, the first menstruation in her life. She was then 18 years old. Patient has been menstruating regularly, at 28 day intervals, ever since. A year later: B.M.R.—13.1%. Intelligence quotient .70; ossification in the wrist had shown slight progress. Height 54".

3. *Case of "sporadic cretinism."*—Miss L. C., 14 years old. Both parents, two sisters and three brothers rather small, but otherwise normal and healthy. Normal birth; normal size at birth. Slow development first noticed at end of first year. Talked and walked at 2.5 years. Only minor children's diseases. Retarded somatic and mental development; amenorrhea. Patient had the general appearance of a 6 year old child. Height 47.5", weight 62 lbs. Body proportions: long trunk, short extremities. Infantile expression of face. Skin dry and rough. Much lanugoid hair along spine; dense eyebrows; no axillary or pubic hair. Small hands, poorly developed nails. Teeth small and irregular, 8 deciduous teeth retained; thyroid not palpable. Breasts and external genitals infantile. X-ray of wrists showed markedly delayed ossification. Intelligence quotient .47, indicating mental age of 7 years. B.M.R.—30%. Glucose tolerance normal. Sella turcica slightly enlarged, no deformity.

Course and treatment. Gr. i powdered thyroid gland daily was prescribed but was discontinued after 4 weeks because of tachycardia. Antuitrin S (Parke-Davis) was then given, hypodermically, two or three times a week, 200 to 300 units a week, for 6 months. Three weeks after the last injection patient had her first menstruation lasting 10 days. She has been menstruating at 5 to 6 week intervals ever since. There is a marked development of the breasts, some pubic hair has appeared, she has grown 2.5". There is no change in the intelligence quotient or in the B.M.R.

Interpretation (Case 2 and 3). Both these cases exhibit all the cardinal signs of infantile hypothyroidism and hypopituitarism. But where

is the primary disturbance localized? It may be a congenital aplasia of the thyroid with subsequent deficiency of the hypophysis, in which case

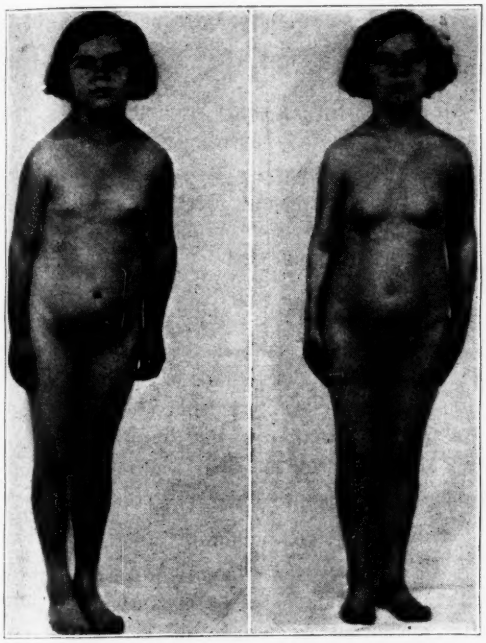


Fig. 3. Case 3. "Sporadic Cretenism." Before and eight months after beginning pituitary treatment.

the diagnosis is "sporadic cretinism," or it may be a congenital aplasia of the hypophysis with consecutive atrophy of the thyroid, in which case one would make the diagnosis of pituitary infantilism with secondary hypothyroidism.

A trial of thyroid therapy was unsuccessful in both cases. The patients did not tolerate even moderate amounts of thyroxin, and smaller amounts failed to produce noticeable effects. The failure of this therapy may be considered as evidence against a primary thyroid etiology in these cases, although other possible explanations cannot be excluded. On the other hand, pituitary therapy was strikingly successful, at least in so far as stimulation of the ovaries was concerned. This experience does not help us to decide the question of the primary etiology but it does indicate that the sex glands can be stimulated by way of the pituitary, regardless of the uncertainty of the primary etiology.

With the menstruation once established, these patients continued to menstruate regularly without any further medication. This stimulation demonstrates the power of ovarian hormones on the sex hormone apparatus of the anterior lobe. Neither the growth hormone nor the thyrotropic hormone apparatus was stimulated, indicating the independence of these functional units from the sex hormone apparatus.

Thyroid therapy, when started in the first or second year of life and continued throughout the developmental age, is frequently strikingly successful in cases like these. Improvement is soon noticeable on symptoms due to an absence of thyroxin, such as protruding abdomen, swelling of tongue, myxedema of skin, eruption of teeth, appearance of ossification centers, mental development, enuresis; growth and sexual development may proceed more or less normally, indicating that early thyroid therapy may save the hypophysis from consecutive degeneration. On the other hand, little or no effect is noticeable on the mental backwardness, on growth and on sexual development when thyroid therapy is started in later life. It is highly interesting that even then pituitary sex functions can be revived through pituitary therapy, as seen in our two cases.

4. *Case of "juvenile hyperthyroidism."* Wm. H., 8 years old. Both parents, three sisters and one brother of normal proportions and healthy. Natural

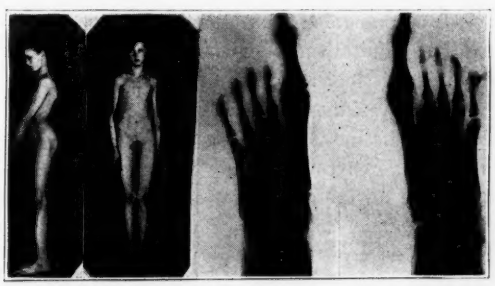


Fig. 4. Case 4. "Juvenile Hyperthyroidism."

birth. First teeth at 6 months. Walked at 15 months, talked at 12 months. Abnormal growth noticed at 6 months. Had mumps, whooping cough and measles. Complaint: weakness of legs, occasional attacks of nausea and vomiting.

Examination reveals a very tall, extremely thin boy. Height 63 inches, weight 65 pounds. Relatively long extremities, short trunk, large head, small lower jaw. Left upper and lower extremities longer than right. Both great toes abnormally long. Marked abnormality of the sacro-iliac joint, with a dorsal displacement of the sacrum at a slight angle to the spinal column. Penis of normal size; both testicles in scro-

tum, slightly smaller than normal. Thyroid gland diffusely enlarged, soft, slightly pulsating. Heart beat strong; pulse 114, regular. Skin moist. There was a noticeable tremor of the hand with intermittent jerks. Exaggerated deep reflexes. X-ray films showed that the diaphyseal ends of the radius and ulna were irregular in contour; ulnae rather short. There was an epiphysis at either end of the metacarpal of each thumb, and at the proximal phalanges of both thumbs, middle and ring fingers. The great toes on each foot, including the metatarsal bone as well as the phalanges, were large and long. There was an irregularity in the contour of the distal third of each tibia and fibula. The sella turcica was rather large but probably within normal limits of size, shape and outline. B. M. R. +21%, on repeated tests. Blood sugar 103 mg %. Glucose tolerance normal. Wassermann negative. Intelligence quotient .90 (mental age 7 years, 2 months).

Interpretation. This patient presents the picture of infantile giantism with acromegaloid features, combined with the syndrome of hyperthyroidism. Some years ago this case would have been probably interpreted as "polyglandular" disturbance. We believe it is a case of hyperpituitarism with overproduction of the growth hormone and thyrotropic hormone, while the sex hormone apparatus of the anterior lobe is intact or deficient. This condition is comparable with the hyperthyroidism frequently seen in the first stage of acromegaly in adults; the latter, however, is accompanied with hypergenitalism rather than hypogenitalism.

While it is logical to assume in this case that the hyperthyroidism is secondary and of pituitary origin, a distinction between primary and secondary hyperthyroidism may be difficult, if not impossible, in the absence of such striking signs as acromegalic changes. In juvenile hyperthyroidism, fast growth of the patient is probably an indication that the hyperthyroidism is of pituitary origin, because in experimental hyperthyroidism of animals, brought about by feeding with thyroxin, the growth is inhibited rather than accelerated. In the hyperthyroidism of adults, acromegaloid changes or diabetes insipidus which occasionally complicate the picture may give a clue to the diagnosis. The genital abnormalities, which are frequently observed in adult hyperthyroidism, may not definitely indicate pituitary origin of the hyperthyroidism, as such changes may occur to some extent in primary hyperthyroidism. Whether an accompanying diabetes, which is rare, or decreased glucose tolerance, which is very common, indicate pituitary origin of hyperthyroidism cannot be definitely stated at the present time. The same is true for the interpretation of the signs of an increased adrenalin output frequently encountered in hyperthyroidism.

The consideration that toxic goiter may be of pituitary origin has already brought about some practical results. Therapeutic x-ray irradiation of the region of the sella turcica has been found to be beneficial in cases of intractable toxic goiter which did not improve permanently after repeated thyroidectomies. Also, hormonal inhibition of the anterior lobe by Antuitrin S has favorably influenced toxic goiter in certain cases.[3] Proper selection of cases, on the basis of a more accurate differential diagnosis between primary and secondary hyperthyroidism, and more efficient means of inhibiting the thyrotropic apparatus of the anterior lobe may lead to important changes in the therapy of hyperthyroidism.

CONCLUSIONS

It is necessary to differentiate between primary and secondary thyroid disturbance. The latter is defined as due to abnormal supply of the anterior lobe thyrotropic hormone.

The possibility of such differentiation and its difficulties are illustrated by cases of hypo- and hyperthyroidism observed by the author, and the practical importance of this differential diagnosis is discussed.

55 E. Washington Street.

REFERENCES

1. H. B. Friedgood: Bull. Johns Hopkins Hosp., **54**, 48-73, 1934. (Contains also extensive literature of the subject.)

2. Zimmerman, L.: Am. Jour. Med. Sci., **178**, 92-99, 1929.

3. Starr, P., and Patten, H.: Endocrinology, **18**, 113-116, 1934.

DISCUSSION

Dr. Garm Norbury (Jacksonville): Dr. Rony has shown us some of the interesting relationships which exist between thyroid and pituitary as well as other glands.

In the present day, I think there is increased interest in the functions of the anterior lobe of the pituitary. Also by reason of pressure perhaps that is sometimes brought to bear through literature and sometimes salesmen for the use of anterior lobe substance, it is well to review just for a minute the essential primary functions of the anterior lobe so that we may know when we are going to use this substance, and just what we are using it for.

The essential functions, I think, as generally accepted, are those related to statural growth, to sexual development, and as also was demonstrated in this paper, to thyroid activity the interrelationship was brought out.

It has been known for sometime that the thyroid and pituitary seem to have much in common. In particular, the lowering of carbohydrate tolerance with deficient secretion, and in the absence of these glands the lowering of body temperature, the retardation of growth and the atrophy of sex glands, those effects as common to both, either in congenital or acquired conditions.

Larson found (in experimental work some time ago) that anterior lobe feeding in rats abolished the effect of thyroidectomy. Allen suggested that the pituitary gland is necessary for the utilization of iodine in the thyroid. Hoskins found that in the feeding of anterior lobe pituitary to tadpoles metamorphosis occurred just as in thyroid feeding. We are gradually acquiring, through experimental and clinical konwledge some more information, as Dr. Rony says. We cannot be empirical, or too dogmatic. We have to feel our way, but the more we can work out the relationship between these glands, the better we shall be able to treat individuals and be of some help to them when they show conditions such as he so clearly presented in his paper.

Dr. W. O. Thompson, Chicago: I should like to ask Dr. Rony whether the striking development of the breasts in the last girl which he showed appeared six weeks after the administration of the pituitary preparation was started, or whether this picture was taken some time later.

We have observed the development of several cretins over a period of years, and have noted that while sexual development occurs late, it does occur in mild cases even in the absence of thyroid function. We have used a "pituitary like" preparation similar to the one Dr. Rony has used but manufactured by a different company, and have found that in some instances it appears to cause the onset of menstruation. However, we have observed a clear cut increase in the size of the breasts which could with certainty be attributed to this medication.

It seems to me of the greatest importance to be sure that changes that occur are the result of the treatment used.

The great difficulty in work of this sort is to secure good controls. It is very difficult to know precisely what will happen to a given individual over a period of years without any treatment.

Dr. Rony: In one of these cases the first menstruation was established after six weeks treatment. However, there was a noticeable change in the size of the breasts even previous to that. The first effect we noticed, two or three weeks after starting pituitary treatment, was the response of the breasts. Then three weeks later the patient began to menstruate. The second photograph of this patient was taken about a half year later.

WHY THE MEDICAL COMMISSION?

T. B. WILLIAMSON, M. D.
Department Surgeon, Department of Illinois, American Legion
MT. VERNON, ILL.

Mr. Toastmaster, Distinguished Guests and Members of the Medical Commission: I am very happy to be with you tonight. This vast audience is a great inspiration to me as a medical man and as a Legionnaire. We have, within the American Legion, one of the finest groups of medical men within the confines of the State of Illinois. The great surprise to me is that it required 12 years after the organization of the American Legion for the Department officers to realize the importance and the significance of the medical profession. There is no group within the American Legion that carries as much influence, is as well educated, or can be of as much assistance in the problem of rehabilitation of the disabled veteran. Rehabilitation is a medical problem, and is one in which every medical man should be interested.

I want to say a few words about the organization and its inception. The Medical Commission of the Department of Illinois was born in Peoria at the Department Convention in 1931, under the able direction of our colleague, Dr. F. O. Fredrickson, who was Department Surgeon that year. He conceived the idea that the medical men of the Legion should be organized to get behind the movement to protect the interests of the disabled veteran, the American Legion, and to bring about full co-operation with organized Medicine. The organization consisted of 1 Department Surgeon, 5 Division Surgeons, 24 District Surgeons, 102 County Surgeons, and 1 Surgeon for each Post. The organization is practically complete throughout the state, which gives us approximately 1,000 medical men in this organization. Each Department Surgeon, since 1931, has worked diligently to complete this organization. The requirements for a physician to be a member of the Commission, Department of Illinois, are: First, he must belong to some medical society within the State of Illinois; Third, he must be a Legionnaire.

There have been a few things that have been responsible for the lack of interest on the part of the medical men. I want to get this program

Address at Veterans' Dinner, Illinois State Medical Society, Eighty-fourth Annual Meeting, Springfield, May 15, 1934.

before you and to refer to one point of legislation that happened a few years ago, known as the D. A. Law. It was very unpopular with medical men. I want to say to you men, without fear of successful contradiction, that the American Legion had nothing to do with it. It was strictly an administrative or political law—a substitute for the Legion program. It was unfavorable toward organized medicine and we of the Legion did not believe in it. It was well for the welfare of the disabled veteran that organized medicine assumed its position in the American Legion. The medical men are the greatest patriots we have. They gave more to the service of the people, the state and the nation than any other organized group and received less compensation. Therefore, a medical man myself, I am vitally interested in the disabled veteran, the American Legion, and in Organized Medicine. I want to say to you that in this problem of the Medical Commission, organized medicine is looked to and cared for.

We have 300,000 veterans in our state. These men are human beings, just as you and I are. They must be treated by someone. If they are indigent patients, you do not want to see them without care. We do not want to see any man who defended the flag of his country classified as a pauper. He should be a Federal charge because this war was not a community affair or a state affair, it was a Federal affair, and therefore, the responsibility of caring for the injured veterans becomes the responsibility of the government. There is a great field, along with the American Legion for organized medicine to step in and take part in this program.

We of the Commission of the Department of Illinois oppose the further building of government hospitals, as a survey of recent origin showed 319,000 vacant beds in public and private hospitals throughout the United States. These hospitals are used for our fathers, mothers, brothers, sisters, daughters and sons, and if they are good enough for the entire family, they should be recognized for the treatment of the disabled veteran. It has been stated by those who oppose the program of the Medical Commission, Department of Illinois, that it would encourage the return to the old contract practice between the government and the local physician. Your Department Surgeon wishes to state that there is nothing in the program of the Medical Commission that refers to or implies a return to the contract practice, and he wishes further to state that it is entirely foreign to his mind.

The five objectives of the Medical Commission program are:

1. To effect close contact between the American Legion and the medical profession through the Veterans' Service Committee of the Illinois State Medical Society.

2. To study carefully all problems of mutual interest to the veteran and organized medicine.

3. To assist Service Officers from a medical standpoint, in proving Service connected disabilities, in order that the cases of deserving veterans may be made compensable.

4. To guide the health activities and welfare work of the Legion in such a way as to prevent misunderstanding between the Legion and the County Medical Societies in their respective communities.

5. (a) That we are in accord with the present law and regulations that provide hospital treatment and out-patient treatment for all Service connected disability cases of all war veterans with honorable discharge, and that we further recommend that the same treatment be available for all war veterans unable to pay.

(b) That we recommend that all acute critically ill cases of all war veterans with honorable discharge and with Service connected disability, be treated in the community in which they arise by an approved physician of the veteran's choice, in home or local hospital, and that a reasonable fee be paid by the Government to the physician in charge and hospital, upon the presentation of the bill, O. K.'d by the President of the County Medical Society in which the emergency occurred and that we further recommend that the same treatment be available for all war veterans unable to pay.

(c) That we recommend that all war time veterans with honorable discharge and unable to pay for treatment who are suffering with chronic constitutional diseases and injuries be afforded Government hospitalization upon the request of the veteran or his conservator.

I have caused to be placed at each one of your plates a copy of this program. I would like for you to take it home and to study it. If there is anything that is not clear, write to me. This program has been approved by the Rehabilitation Committee of the American Legion, Department

of Illinois, the Council of the Chicago Medical Society, and the Council of the Illinois State Medical Society.

We are not organized to fight or to hurt anyone or any organization. We are organized to serve as an adjunct to the present Legion organization and to bring to organized medicine that which is justly due it. You men are all heavy taxpayers. There is no one more sought after than the doctor. They come to you for advice in everything. When these veterans come to you, I ask you to be kind to them. Most of them are sick and need advice. When you find a man sick mentally, be kind to him. We have a few gold bricks. Be careful and do not be in too much of a hurry to turn them away, because you may find one who is critically ill. You men who belong to this organization, I ask you to go into your Posts and into your County Medical Societies and talk on this program. Talk to your Post on sanitation and assist your Department of Public Health in the immunization program, and through that co-operative spirit in the community you will build for your Legion an honorable reputation.

THE USE OF BASE IN PRISM IN THE TREATMENT OF MYOPIA

P. A. GRAVES, M. D., and

OSCAR B. NUGENT, M. D.

From the Ophthalmological Department of the Chicago Eye, Ear, Nose and Throat Hospital

CHICAGO

Classification: Myopia may be divided into three classes or types,[1] 1. axial myopia, in which globe is too long, or longer than the accepted normal dimension; 2. refractive myopia, in which the length of the eyeball is normal but the refractive power is greater than the normal eye; 3. combination myopia where the length of the eyeball and the refractive power are both "high normal" or greater than normal.

A scrutiny of the literature discloses a diversity of opinion as to the cause or conducive conditions, each one of which may contribute something in a small way, but none of which point authoritatively and convincingly to the real cause of myopia.

Read before Section on Eye, Ear, Nose and Throat at Annual Meeting of Illinois State Medical Society, Springfield, May 15, 1934.

We believe a good theory, which has been partly proven, upon which a good working hypothesis can be formulated, is the one that all people with normal eyes have a condition of hyperopia at birth and the development of the eye is regulated by some relation between the power of refraction and the length of the globe. The activity[2] of the ciliary muscle, then would naturally be the regulating force.

Another theory, report of which we have not observed in the literature, is that the length of the eyeball is a racial characteristic, the same as the height of a group of individuals, some taller, some shorter than the average. The eyeball, then, attains a certain length which is regulated by hereditary tendencies and general metabolism, and in no way influenced by the condition of refraction. The action of the ciliary muscle in producing a greater or lesser refractive power in the lens, tends to direct the development of its refractive power to the strength necessary to meet the individual need.

Causes: As stated above, the literature of today presents a wide diversion of opinion as to the cause or causes of myopia. The question of heredity is frequently discussed. There can be no question but that heredity plays a certain role in the initial cause of myopia, but there is much doubt that myopia is inherited per se. There is, perhaps, rather the inherited tendency for myopia to develop. A defective ciliary muscle[3] or a weakly constructed sclera may be examples.

It is claimed[4] by some authorities that myopia has no relation to the amount of work required of the eye, but it is the direct result of inherent tendencies on the natural body growth, and cite the type of early childhood,[5] which is distinct from the so-called school myopia.

The natural eye[6] is considered to be full grown at the age of eight, and any elongation of the eye after that age should be regarded as pathological. Progressive myopia usually manifests itself at about the age of twelve.

High myopia[7] should be considered a disease of the eye. Its causes have been given as 1. mechanical; 2. hereditary; 3. acquired, but this classification is not broad enough as many named causes do not fit into it, while others may come under more than one heading.

Progressive myopia[8] is said to be present in seventeen per cent. of all cases of myopia.

Myopia is said to be due to calcium[9] deficiency; also to a lack of chlorides[10] which causes a swelling and a metabolic disturbance in the lens. Another cause given[11] is the production of acid proteolytic ferments or other reagents that increase the hydration capacity of the hydrophilic colloids of the posterior segment, thus producing a chronic water-logging.

Hypothyroidism[12] has been looked upon with suspicion as a study of 38 cases of progressive, axial myopia gave an average of minus 19.3 and the conclusion drawn that progressive myopia and hypothyroidism were closely related. One-fourth of all cases[13] of myopia are said to show a state of hypotony.

We are of the opinion that convergence plays an important role in the production of axial myopia in eyes with a weaker than normal scleral structure. In Switzerland,[14] in 1924-25, a survey was made of 11,251 persons from 19 to 20 years of age, of whom 672 or 6% were myopic. Comparing the city with the urban residents, the former averaged 8.6% while the latter only 3.3%. Students, teachers, tailors, watchmakers and machinists and those doing finer and closer work showed from three to four times the percentage of myopia than farmers and others doing similar work. This may be due to two conditions: 1. that hygienic surroundings were better among the farmers, which produced in the eye a stronger scleral structure, or 2. that the convergence necessary to perform the work of the city dweller is accountable for the increase of myopia; however, it is quite likely due to both.

Excessive convergence[15] has been thought of as being the most direct cause. Watchmakers who use a magnifying glass over one eye do not show a high percentage of myopia. The opinion[16] has been advanced that this is because they do not use their accommodation, but others express the thought[17] that it is due to the fact that they do not converge. The author's opinion is that the latter is the best explanation.

Treatment: Here again we find divers opinions set forth in the literature, almost as varied as those as to cause.

The treatment of myopia may be divided into medicinal, surgical, hygienic, physical, physiological, optical and occupational.

Instillation of epinepherine,[18] also combined with atropine[19] and the use of Vitamin "D"[20] in the form of viosterol and calcium have been used in the treatment. It has also been observed by the authors and reported in the literature by others that the removal of the crystilline[21-22-23] lens greatly reduces the high degree of myopia.

The use of contact glasses[24] has been described. In one group of 38 patients[25] with high myopia, the vision was improved in most cases by the use of contact glasses, but only two patients wore the glasses as a routine.

The strict observation of general[26] hygienic rules caused a reduction of myopia in Portugal from 21% in 1907 to 12% in 1929.

Myopia may be controlled[27] and its progress arrested or lessened by giving full correction and avoidance of near work up to 6 or 10 years of age. This condition may be greatly benefited by hygiene and outdoor exercise and close attention to general health. Some authors[28] depend much on the elimination of close work as a prophylactic as well as a curative treatment.

Progressive myopia was halted in its progress by disassociation of the two eyes in near vision by the use of monocular cycloplegia.[29] Certain exercises with prisms and the prescribing of prisms base in for constant wear has been described by one author.[30]

This brings us now to the consideration of our own treatment, which was first used by Graves 10 years ago and adopted by Nugent 5 years ago. It is based upon the assumption that all high and progressive cases of myopia are primarily due to a weak scleral structure which, by the effect of certain forces, stretches the sclerotic and results in an elongation of the eyeballs and further, that the most active of these forces is that produced by continued and extreme convergence.

In presenting this subject for your consideration, we are fully aware of the vast amount of research that has taken place in the study of myopia, reference to some of which has already been made. Dr. Graves, working alone, has given a great deal of study to myopia, its cause, prognosis and treatment. In 1929 he presented some of his findings to a group of ophthalmologists at a meeting of the American College of Surgeons in Chicago, and again, in 1933, he presented further findings before the same body. He interested Dr. Nugent in this work, and together we have carried out a number of experiments with gratifying results.

As has already been stated, there are different kinds of myopia, and each case has to be handled with this thought in mind. Just how we can classify these different types, we cannot say now, but we believe further careful observation and study of many cases will, perhaps, teach us to classify and handle them in the proper manner.

One type of myopia, however, we believe can be classified—that is the so-called "school myopia," which if not controlled will, in our opinion, develop into some other type as we will later describe.

It is our belief that myopia, or a large percentage of it, has its start in childhood and is due to a weakened scleral structure allied with faulty eye habits and uncorrected errors of refraction, causing excessive accommodative efforts which produce excessive convergence. If we can get these young patients early, even if they are wearing minus correction, we feel that we can, in the majority of cases, either remove or lessen the correction worn and arrest its progression. The younger the patient, the greater our success has been.

The eyes of children do not coordinate at birth but must learn to work together just as their two hands or two feet do, but there is no way of telling whether their eyes are coordinating until certain definite eye habits are formed. Eye habits are usually normal, but disturbing influences coming into the life of the child interfere with normal two-eye development, cause bad instead of good ocular habits to form.

Often in later years good eyes are abused by months of strain which throws the delicate coordinating mechanism out of balance, and even after the cause of the strain has been removed by the wearing of proper glasses, the faulty eye habits may linger on and comfortable vision can be obtained only by painstaking elimination of the faulty habits. In the majority of cases we are not through with our patient when we have prescribed a pair of glasses.

In an examination to determine whether the myopia can be reduced, it is necessary to ascertain if there is any manifest myopia which has been corrected. In the majority of cases manifest myopia can be eliminated by the proper muscle training to relieve excessive convergence. To give us an index of the amount of correction which we can eliminate, we first make a near point test, using the cross cylinder method of Jackson which he described a number of years ago.

We do not think in terms of exophoria but in terms of abduction. If you find a myope showing esophoria you may be sure that the correction worn is too strong. The procedure by which we determine the amount of base in prisms to be prescribed in any given case is as follows:

After obtaining the true near point correction, with the cross cylinder test, as mentioned above, we take the abduction at the far point adding base in prisms divided between the two eyes until we get an image break. Then we reduce the strength of the prisms until the image is one again, and the amount of reduction with base in is added to the correction. If we take the abduction with the correction and find the image break is high, say eight to ten prisms degrees, and with a high degree of recovery point, say four to six prism degrees, the patient's myopia correction may be reduced. The amount of prism worn at this recovery point is incorporated into our first prescription and with this base in prisms in front of the eye we do binocular refraction, building up the amount of minus slowly until we reach the visual acuity we wish. If any astigmatism is present in these cases we usually correct it with plus cylinders and proceed as above. But we have found that it is not necessary to correct astigmatism up to and including .75D, as in the majority of cases these astigmatic errors are corneal and we have found by relaxing the convergent muscle this amount of corneal astigmatism will be eliminated. We also determine, at this point, the degree of relative and accommodative convergence. The amount of reduction in this correction should correspond to that shown in the cross cylinder test. The wearing of this amount of base in prisms will give great comfort to the patient and will, we are sure, stop any tendency of the myopia to progress.

About 1895 a man named Allen used prisms base in for the elimination of pseudo myopia. For many years in many cases we have used base in prisms for the correction of exophoria, but in our later work and study we have found virtue in the use of prisms base in for the purpose of breaking down convergent tensions and for the relaxation of accommodation. We know that in wearing certain optical correction, at least two-thirds of the convergence must lay in the relative field in order to produce eye comfort. When

more than this convergent effort lies in the accommodation convergent field, eyes will not be as comfortable; especially is this true with myopic defects.

According to Jackson in the Journal A. M. A., 1930, the development and increase of myopia depend on the convergence of the eyes for near work. He goes on to state that if we can examine these young children at the beginning of school we could prevent much of the myopia and keep to a low degree that we do find, but he does not prescribe the method by which this can be accomplished.

Where myopia is discovered in children early in their school life, we believe it should be classified as a pseudo myopia, and even though it is necessary to give them minor correction for distance visual acuity, we believe that in many of these cases there should be a plus addition for their near work. We have found that in many of these cases where we add a plus correction for near work, together with base in prism, in a very short time the correction they were wearing for near vision would be the correction that we could prescribe for distance vision.

We have now had a sufficient number of cases treated by the base in prism method under observation for a sufficient length of time to draw the following conclusions:

First, in over fifty per cent. of our myopia cases the correction can be reduced and better acuity given with greater comfort to the patient.

Second, a patient wearing a correction that gives visual acuity of 20/20 or better, can have the same visual acuity with less correction by using base in prisms.

Third, those cases which do not have 20/20 can obtain better acuity with the use of base in prisms, but cannot accept a reduced correction.

Fourth, our records also show that in all forms of progressive myopia, the progression can be stopped by the wearing of base in prisms.

Case 1. Mrs. C., aged 57 years, has worn correction for years. Correction worn when first examined:

O. S. 20/200—175—75x140 20/40
O. D. 20/ 60— 75—50x180 20/20

Is now wearing:

O D— 25 2 base in
O S—125—50x140 2 base in } 20/20

Case 2. Mrs. E., aged 27 years, had lenses changed and correction increased each time in a period of 15 years. Was wearing:

O D—450
O S 225—50x180 } 20/20

with base in prisms exercise. We have reduced correction twice. Is now wearing:

O D—275=3 base in
O S—125=3 base in } 20/20

Case 3. Miss S., aged 17 years. This case is of particular interest because it was of a progressive type, with a history of a number of lens changes in a two-year period; also she was wearing prisms but for a vertical imbalance. 3 base up in right eye, 3 base down in left. She complained of diplopia for near vision but not of a vertical degree. Her correction when we first saw her (Sept. 9, 1929), was:

O D—8—250x180 3 base up 20/32 vision
O S—9— 75x180 3 base down 20/65 vision

First Rx was:

O D—8—250x180 8 base in
O S—9 8 base in } 20/20

December 15, 1929:

O D—650—100x180 8 base in
O S—700 8 base in } 20/20

April 1, 1930:

O D—550—100x180 6 base in
O S—600 6 base in } 20/20

There were two changes after that: September 1 she was wearing, and is now wearing:

O D—550—100x180 4 base in
O S—600 4 base in } 20/20

Very comfortable, no diplopia, no hyperphoria, and vision remains 20/20.

Case 4. Mrs. J., aged 19 years. Her correction at time of examination was:

O D—375—75x140
O S—475—50x 90 } 20/20

From March 1, 1930, to June 23, 1933, we changed her lenses three times. Her Rx now is:

O D—275 3 base in
O S—300 3 base in } 20/20

Has had no discomfort and reports her eyes feel much easier with her work than every before.

Case 5. Mrs. N., aged 23 years, vision without correction 20/40. Was wearing

O D— 75
O S—100 } 20/20

We gave her

O D 2 base in
O S 2 base in } 20/20

Vision without glasses after three months of training with base in prism was 20/20. We advised wearing the base in prism for near work only.

Case 6. Mr. L., aged 27 years, December 20, 1932, correction worn:

O D—150
O S—125 } 20/20

Two changes of lenses were made during the year with base in exercise—on December 15, 1933, Rx was:

O D—50 3 base in
O S—50 3 base in } 20/20

Case 7. Aged 27 years, under cycloplegic with retinoscopy:

O D—700
O S—700 } 20/20

Post cycloplegic with the —700 before each eye with cross cylinder test could reduce the correction to —600. Abduction was 10 prisms before image break. Recurrent point 4 prisms. With the amount of base in prism divided between the two eyes without any correction before the eyes was added —sphere .25 degrees at a time until patient could read 20/30 binocular vision. After base in exercises for one month, patient reads 20/20 binocular. ℞

O D—550 2 prism
O S—550 2 prism

In reporting these cases we have not gone into detail as the method used is explained in the text.

Case 7. Aged 30 years, was wearing:

O D 20/200—150 }
O S 20/100—150 } 20/20

Final ℞:

O D—50 2 base in }
O S—50 2 base in } 20/20

Case 8. Aged 19 years.

O D—375—75x150 }
O S—425—50x 90 } 20/20

Final ℞:

O D—275—25x150 3 base in }
O S—375 3 base in } Binocular vision 20/20

Case 9.

O D 20/40—75—25x180 }
O S 20/40—75—25x180 } 20/20

Final ℞:

O D 2 base in }
O S 2 base in } Binocular vision 20/20

CONCLUSIONS

We believe that the wearing of base in prisms will greatly add to the comfort of the patient wearing a minus correction;

That the wearing of base in prisms will, in 50% of cases, admit the wearing of a weaker correction, with the same advantage;

That the wearing of base in prisms will stop the tendency of progression in all types of myopia;

That the principle of this method of treating myopics is to relax the convergence.

BIBLIOGRAPHY

1. Tron, E.: Refraction, Myopia, Arch. f. Ophth., **126**: 454-464, 1931.
2. Holms, E.: The Etiology of Myopia, Hospitalsted, **68**: 68, 1925.
3. Wood, A.: A Suggestion as to the Cause of Myopia. Ophthalmoscope, **14**: 302, 1916.
4. Vizquez, Barriere A.: Myopia in relation to general biologic law. Arch. d'oft de Buenos Aires, **7**: 515, 1933.
5. Bruchner, A., and Franceschette, A.: Myopia of the Childhood Period. Arch. f. Augneh., **105**: 1-12, 1931.
6. Sorsby, Arnold: School Myopia. Brit. J. Ophth., **16**: 217-222, 1932.
7. Rodin, Frank H.: Etiology of Myopia. Arch. Ophth., **9**: 264-279, 1933.
8. Lemoine and Valois: Considerations as to the Etiology and Treatment of Progressive Myopia (ectalic sclerochoroiditis) Arch. d'Opht., **50**: 249, 1923.
9. Walker, J. P. S.: Progressive Myopia—a Suggestion explaining the Causation and for its treatment. Brit. Jour. Ophth., Aug. **16**: 485-488, 1932.
10. Thorson, J. A.: Myopia in Alkalosis from Sippy treatment. Arch. of Ophth., **10**: 20-24, 1933.
11. Turner, H. T.: Discussion of the elements underlying progressive axial myopia. Penn. Med. Jour., **34**: 173, 1930.
12. Bothman, L.: The basal metabolic rate in progressive axial myopia. Tr. Sect. Ophth., A. M. A., 1932, 261-270.
13. Caso, G.: Myopia and Tension relative to ocular lesions. Lettura Oft., **8**: 287-308, 1931.
14. Rohner, M.: A statistical study of the frequency of Myopia. Schweiz. Med. Wchnschr., **62**: 706-710, 1932.
15. Jackson, E.: Norms of Refraction. Trans. Sec. Ophth., A. M. A., 1931, 174-190.
16. Holm, E.: The Pathogenesis of reading myopia. Acta. Ophth., **3**: 234-244, 1926.
17. Donders, F. C.: On the anomalies of accommodation and refraction of the eye. Trans. The New Sydenham Society, London, 1864, p. 343 (See also No. 7).
18. Wiener, M.: Epinepherine in progressive myopia. Jour. A. M. A., **89**: 594-596, 1927.
19. Danielson, R. W.: Progressive Myopia. Case presentation. Col. Ophth. Soc. Proceedings. Jour. Ophth., **15**: 857, 1932.
20. Levine, Joseph: Progressive myopia. Arch. Ophth., **9**: 459, 1933.
21. Biering, Stephen: Myopia extraction after successful keratoplasty. Kim. M. f. Augenh., **90**: 43, 1933.
22. O'Connor, Roderic: Removal of lens for high myopia. Am. Jour. Ophth., **16**: 516-518, 1933.
23. Manes, A.: Surgical treatment for myopia. Arch. de Oftal. de Buenos Aires, **16**: 23, 1931.
24. Slichavska, Olga: Contact glasses in keratoconus and in ametropia. Am. Jour. Ophth., **15**: 1025, 1932.
25. Blatt, Nicholas: The correction of high myopia by Mueller's contact glasses. Arch. Ophth., **7**: 399, 1933.
26. Moutinho & de Maltos: Myopia in school children. Trans. Thirteenth International Oph. Congress, Arch. Ophth., **3**: 817, 1930.
27. Jackson, E.: The control of Myopia. Am. Jour. Ophth., **14**: 719-725, 1931.
28. Meller, J.: What regulations are employed in progressive juvenile myopia. Wein. Klin. Wchnschr., **44**: 21-23, 1931.
29. Luedde, W. H.: Monocular Cycloplegia for the control of Myopia. Am. J. Ophth., **15**: 603-610, 1932.
30. Wolfe, Otis: Notes on muscle and fusion training and orthopic treatment of motor anomalies. Am. J. Ophth., 15: 618-626, 1932.

DISCUSSION

Dr. O. B. Nugent, Chicago: There has been much discussion concerning the causes of myopia. Of course there is in the type of rapid progressive myopia certainly some form of pathology in one way or another. There is a very interesting report of a program of examination carried on in Switzerland some years ago, in which those people who did close work in cities, in watch factories, etc., were compared with those who lived on farms in rural districts, and it was found that in the rural districts myopia existed in lower degree than in the cities. Especially it was higher in the watch factories in Switzerland, except one type of watch maker who used monocular magnifying lenses, who had low myopia. This is perhaps due to the fact that in using this type of lens there was a disassociation of the two eyes, and in so doing convergence was relaxed and therefore the myopia was not increased. This goes along with our work, as we have been using base in prisms, with which to relax convergence.

INDIGENT RELIEF

CLEAVES BENNETT, M. D.

CHAMPAIGN, ILL.

I am very much pleased to be given this opportunity to speak to this organization—but I regret most deeply the circumstances which placed me upon this program. I have no idea that I can speak to you as well, or as entertainingly, as could Dr. Center, whom you were to hear at this time, but I hope that his paper was written, so that it may be preserved. For if it was, it was *good;* no one in the State Society, or in this country, had a surer, keener insight into the problems of our profession than he, nor a better way of expressing them. And he had a far-seeing vision in medical affairs.

I'm going to ask you to give me just a few minutes aside from my announced subject. I don't know just what I can say; it can't be much, but I want to talk just a little about Dr. Center.

Some of you men knew him; some longer, but none better than I have during the last six years. But it makes no difference to me whether you knew him or not, or liked him or not—to me he was a fair-minded, good-intentioned, kindly, "square-shooting" American doctor. The training he had from boyhood up was, judged by the standards of today, scanty, irregular and hard. It took physical as well as mental courage and perseverance to go through his life. It is no wonder he was the good soldier and leader which he was—his own life developed that in him. And through it all he developed as keen an insight into human character as any man I have ever known. He had faults, who hasn't? He had enemies—all positive men have. Rough sometimes? I know it. But his heart was *kind;* he would rather have friends than enemies, and he was absolutely soft hearted in his friendships. And if he thought he had to fight you he fought you fairly and aboveboard; there was no "double-crosser" in him. That's the kind of a man whose friends sincerely love him, and whose foes sincerely respect him.

He liked to have honors, and deeply appreciated them. He told me that the last and highest honor he could think of was given him when he was elected President of the Illinois State Medical Society. "Because," he said, "this gang knows me. Knows that, for better or worse, I've worked among them for thirty years. If, after that, they'll make me President I can die satisfied and happy." He meant that, and he knew what only a few of us knew also, that he was facing death daily from his own condition for the last four years. I'm glad he was chosen in time to have that feeling of grateful satisfaction which he had.

I've seen more than a thousand people draw their first breath; I've seen a good many draw their last one. I have no fine spun theories concerning these things we call human life and death. I don't understand them any more than I understand a hundred things that we see around us daily. But I like to think, and I shall always think, that our stay in this world is but one transition period in an endless existence. I am—call me an Indian if you will—a believer in the "happy hunting grounds." I like to think of Center now, in a comfortable chair, with a good cigar, with the pain in his knees and the pressure in his chest all gone, watching over, and waiting for, his friends.

INDIGENT RELIEF

For many years, whenever this subject was brought up in a medical meeting it was done so more or less apologetically. Appendixes and gall-bladders were more interesting and more lucrative, than paupers and boards of supervisors. They ought to be yet, but they are not. The passage of time, the changing world and our own lack of foresight has changed all that for us. Mention the "indigent poor" in any professional gathering today and you "start something" instantly. Why not? There are today millions of people in the United States who depend for medical attention upon the charity of others, individuals or public organizations. No wonder this subject has finally fairly forced itself upon us. It has become a burdensome proposition; it may become better supported, but it will not become less in size. And it is here to stay; the promised "full dinner pail for everyone" will never come—it never has, and it never will. I'm not pessimistic, and I'm not afraid of our ability to do our proper share. But I'm not going to delude myself into thinking we won't have to do it. What I'm interested in is the medical profession being paid a fair monetary remuneration

Read at Secretaries' Conference at Annual Meeting of Illinois State Medical Society, Springfield, May 15, 1934.

for what it does. Our profession never did owe the rest of the world a cent—and doesn't now. The debt is the other way.

Each community in Illinois has its own local problems—each physician has his own ideas. It would be an endless task to go over them all; I don't think it would do much good. What I will try to do, briefly, is to indicate what is being done in some places, and possibly from that draw some general conclusions which may help in the solution of affairs in different counties, outside of Chicago. I do not know enough of conditions there to discuss them. And I'll not try to go back over the rocky roads which have been traveled in getting to some of the more or less satisfactory, or unsatisfactory, present-day solutions. And remember that the solution of this year may not be, probably will not be, the proper one for next year.

One county society, after a bitter fight, was given a certain amount of money in cash to take care of the indigent poor. I think it was about $15,000 for eight months to be spent as the society organization directed. That time is about up now. I don't know how they have gotten along; one of the instigators of the plan told me at the time that they expected it to work out about one-third to one-half of the ordinary minimum fees. I am told it fell through, because the money was not appropriated by the civic authorities.

Another society has had for eight or ten years practically full fees for medical work, about two-thirds for obstetrical and minor surgery. For some years the major, hospital surgery was done by the hospital staff for nothing, but that has been changed so the operator receives a fractional fee, about one-third. The patient could have anyone in good standing in these societies that he and the county authorities agreed upon. One of the larger industrial counties has been operating for two years or a little more on practically the fractional fees of the Emergency Relief organization of today. There again the inevitable major surgery problem came up.

In two other counties five or six groups of five or six men each do the work in services of two months each. Both of these work on the fractional fee basis and have handled the work very well. One has run successfully for years; the other is at present in the midst of a three-cornered fight between the board of supervisors and two factions in the medical society. That will be decided July 1, and the supervisors with their ten cents-on-the-dollar plan will win if the doctors are foolish enough to remain split. It sometimes looks to me as if we would never learn that our one hope of salvation is in sticking together. I don't care how much I dislike a man personally, I see no sense in wrecking myself financially in order to get a job away from him. And yet that is exactly what happens all over this country in medical circles. It would be funny if it wasn't serious.

Out of the stories that I hear and the troubles that are told and the experiences recounted in the last twenty years, certain undeniable facts are beginning to establish themselves.

First, the biggest real problem before the medical profession today is its present and future economic position. Ours is the greatest and most independent profession on earth—and yet how many of you will soberly and honestly advise a young man who has to earn his own living to spend seven or eight years of his life and $7,000 or $8,000 of his—or somebody's—money to enter a profession which you and I have allowed to become neglected financially as we have this one? Think that over, you men with boys.

Second, we have got to stick together, because we have proved in numberless instances that we can't get anywhere if we don't. And there are enough of us who will stick, when we have to, to convince the occasional outlaw that he is following a hard and lonely road.

Each local unit should make its own regulations. For the hundredth time I want to say again that there is no reason why governmental organizations should buy their medical services for less per cent. than they buy their coal. Is it any easier or more pleasant to serve patients "on the county" or on the I. E. R. C. than those who pay their own bills?

The trouble invariably comes in the cities and towns, where there are doctors who, for reasons best known to themselves, cut fees. I personally think, though that would be denied, that most of them do it to get in the limelight, to advertise themselves. The doctors in the country districts get their normal fees, or they don't *go*, which is entirely as it should be. If the men who live in

town, and adjacent to the hospitals, choose to work for nothing, that's bad enough, but they should not interfere with the fees of other men. If I happen to live where I think I can afford to do pauper work for one-half or one-fourth fees, I haven't any right to make rules which will force that upon some one else. In one township in the county where I live one man takes the pauper work for $500 a year, which is standard fees for what the work had averaged for years. If it runs past a certain amount of work, which it occasionally does a little, he gets 75% of regular fees. That man is a good investment for that township; he takes good care of those who deserve it—and he's absolutely "hard boiled" to those who don't. You can be very sure that the County Society won't make any rules which will bother him at all.

With due respect for local modifications according to circumstances, it seems to me that an understanding that no physician shall work for the county for the indigent poor for less than a certain fractional fee, say 50% of the minimum established fee, is a good way to start. Even that arrangement should in some way be overseen by the parent society, for we unfortunately sometimes have backsliders in our own ranks. The man who practices where he has it all to do should make his own arrangements unhampered by the rest of us; and we should help protect him from the "chiseler." In the towns and cities, if the work is spread around among those who are willing to take it, so that it doesn't become a burden to anyone, it seems to me that the average 50% of minimum fees is a generous offer on our part, and that we ought to have it. If we do not get it, it is because of our lack of courage, and foresight, and last but not least, of respect for our own profession. Whether the work is done by an individual, by groups, or by clinics, it is *work*, it is deserving of remuneration, and we have to do it or it isn't done. The Rosenwalds and the Filenes can't do it themselves.

DISCUSSION

Dr. Harold M. Camp, Monmouth: I have been interested in indigent care for a lone time. The indigent we have had with us from time immemorial, even from biblical days. I agree with Dr. Bennett that we have lost a lot of valuable time; we should have learned years ago to care for the indigent normally as well as in emergency, and I think when the emergency is over and we are back to normalcy we should have our plans to take care of this problem in the future.

I believe that the most pernicious evils are the individual contracts now in existence, particularly in Illinois. A few months ago I had occasion to write letters to a great many men holding these contracts and we elicited some astounding information. We found that the average man who contracts to give this care accepts a contract paying him from 16 to 18 cents for each office call, from 22 to 26 to 28 cents for residence calls, and for the giving of salvarsan and furnishing the drug, 42 to 48 cents per treatment. This condition is the fault of the physicians. I thoroughly believe that if the physicians of every community would refuse to accept these contracts it would be only a short time before the ones responsible for the financial arrangements would give approximately the normal rate for the service. I see one secretary here this morning who always attends the secretaries' conference. His county has a satisfactory arrangement with the board of supervisors. That county society approved the plan for giving medical relief, but although they approved it they do not expect to operate under it because they already have a satisfactory arrangement with the supervisors. I believe we should work out a very intensive educational program in our society and then go out and talk things over with the board of supervisors. I believe these men are human and reasonably intelligent, sufficiently so to see the doctor's side of the problem.

Dr. Bennett referred to one county that thought they had the matter settled and were to get adequate remuneration, but in this instance it was the membership of the medical profession that caused the overthrow of the plan. The Iowa State Medical Society, as you know, has the well-known Iowa plan. The county society receives a certain amount of money for giving care to indigents for a year. The physicians in one county will receive $18,000.00 for this year's care. They have established separate offices to take care of these patients and they are satisfied with this plan and they do not care for any plan operating under the emergency relief commission. The Illinois plan has been approved by the advisory committee of the State Society and is operating in forty or fifty counties, and in a number of them it is satisfactory.

I would like to hear Dr. Phifer refer to Cook County. Unfortunately it is impossible under the Illinois law where it is handled by townships rather than counties, to adopt a system that would be like the one in Iowa, which I believe is better than any plan we have at the present time.

Dr. Charles H. Phifer, Chicago: I want to concur in what Dr. Bennett and Dr. Camp have said in reference to a few doctors in each community defeating the cause for the general profession. In Cook County we had fifty-six physicians under civil service caring for the County poor. This group of men during a period of 19 months in 1932 and 1933 received for the care of the indigent and unemployed in our County $282,212.50. This was done on a basis of $1.50 per call. As a result of much pressure this number was finally enlarged to a personnel of 88. Many efforts had been made on

the part of members of the Chicago Medical Society during the previous two years to have this work allocated to the members of our Society. Our Medical Advisory Committee has spent many hours in a concentrated effort on this project as it was necessary for our committee to convince the Commission that this work could be done as well by the medical profession as it could by their smaller group.

The Commission finally agreed to refer the medical care of the indigent to the Cook County Physicians and those on the Illinois Emergency Unemployment Relief to the medical profession.

The day the Illinois Program for the Medical Care of the Unemployed was adopted by the Illinois Emergency Relief Commission and the Illinois State Medical Society I received approval to put it into effect in Cook County. We immediately circularized all physicians and by the 14th of February 1800 physicians had signified their desire to render medical aid to those on relief. The Commission began referring calls March 12 and by March 20 the entire load was transferred to the medical profession. For the month of April $15,801.50 will be paid to the physicians in Cook County.

Our Local Medical Advisory Committee meets twice a month with the representatives of the Commission, at which time all matters pertaining to the service are thoroughly discussed.

I believe that the Commission is making every effort to cooperate with our local organization.

Dr. Cleaves Bennett, Champaign (closing): I have nothing to add, except to endorse what the discussors have said, and to repeat that it is up to us to give this our attention if we are to survive.

THE EFFICIENCY OF ORTHOPTIC TRAINING IN STRABISMUS

J. L. BRESSLER, M. D., and
KATHERINE H. CHAPMAN, M. D.

CHICAGO

Within the past few years much enthusiasm has been reawakened in orthoptic training of strabismus. The most recent report on this work, presented by Guibor last June, proved to be a very interesting and valuable analysis of the efficiency of orthoptic training in squint cases at the eye clinic of Northwestern University.

After hearing this report, Dr. Thomas D. Allen became very eager to determine the merits of the treatment outlined, and gave me the opportunity to start and to develop such a squint clinic on his service at the Illinois Eye and Ear Infirmary.

On September 1, 1933, our clinic was started. Our aim is to study the value of orthoptic training in strabismus. We desired to see if it were possible to eliminate the angle of deviation without operation and to overcome amblyopia and suppression, thus restoring, as nearly as possible, the normal muscle balance without subjecting patients to surgical procedures.

May we take this opportunity to express our gratitude for the whole-hearted cooperation our clinic has received from Dr. Harry S. Gradle, Dr. Thomas D. Allen, the attending ophthalmologists of our institution, and the management of the Illinois Eye and Ear Infirmary.

This presentation today is an initial report of the work and of some of the results obtained at our clinic since its inception. We wish also, to acquaint the profession at large, and particularly the physicians of Illinois, with the type of work being developed at one of our state institutions.

Claude Worth first emphasized the importance of fusion in the treatment of squint in 1903. He states: "The education of the fusion faculty should be undertaken at the earliest possible age. It is of extreme importance and the only key to success."

Conrad Berens in 1929 stated: "Orthoptic training is frequently of great value in some cases and obviates the necessity for surgery. It should be tried in every case primarily, and in those cases ultimately requiring surgery, it should be continued as an adjunct treatment to insure the best results."

Miss Maddox in 1931 reported: "It has hitherto been generally accepted that orthoptic treatment has little or no value after six or seven years of age, but results tend to prove:

"1. That the fusion faculty can be trained in adolescence and early adult life.

"2. That the percentage of cases having no fusion faculty is very small indeed. The fact that results can be obtained, increases the sphere of usefulness of orthoptic treatment."

Guibor, in his work at Northwestern, has developed a technique which is giving good results. The technique and routine which we have adopted at the Illinois Eye and Ear Infirmary and are to describe here follows very closely the principles developed by him.

From the Records of the Orthoptic Clinic of the Illinois Eye and Ear Infirmary

Read before Section on Eye, Ear, Nose and Throat at Annual Meeting of Illinois State Medical Society, Springfield, May 15, 1934.

In our study of the treatment of strabismus with orthoptic training we find that our main objective is the development of fusion and stereopsis. The elimination of the deviating angle can only be accomplished when fusion is present. It is therefore essential that we know some of the fundamentals of fusion.

Worth defines binocular single vision as a psychical blending of two sets of visual impressions from corresponding parts of each retina. This, he says, applies to distant objects only. For near vision the images do not usually fall on corresponding parts of the retina but, due to the very elastic fusion faculty, the brain blends these into one image.

The different grades of fusion are recognized as follows:

1. Simultaneous macular perception: Here the patient sees devices in a stereoscope as two separate objects. These may remain separated or have a tendency to overlap, but in either case the desire or ability for binocular vision is absent.

2. True fusion with some amplitude: Here the patient is able to fuse the two retinal images and has some ability to maintain fusion. The latter is evidenced by the patient's ability to keep the two images fused while the separation between the two objects in the stereoscope is increased.

3. Sense of perspective or depth perception: Each eye sees the same object but from different angles. The psychical blending of these dissimilar sets of visual impressions enables one to appreciate the solidity of objects and assists in the judgment of relative distances.

In our study today we are not going into the theories, causes, or classification of squint. However, I am going to mention a few important conditions usually found associated with it. Two essential conditions always present are a deviation of the visual axes and a defect of the fusion faculty. The following conditions may also be found: first, the image of the non-fixing eye is almost invariably suppressed; second, in rare cases there is a congenital amblyopia; third, there is often an acquired amblyopia in the deviating eye; and fourth, usually a refractive error is present. When fusion is absent we must have either diplopia or suppression.

The eye used for vision is called the fixing eye; the other is the squinting or deviating eye. Eighty-five per cent. of all squints are unilateral or monocular; fifteen per cent. are alternating.

Most cases of strabismus occur between the ages of one and five years, the greatest number of these being between two and three years of age. After puberty the angle has a tendency to become less. When adult life is reached, the angle of deviation may have disappeared, but by that time, if the case has remained untreated, there may also be a marked loss of vision.

Treatment of strabismus cases should always be started early. The sooner this is done after the appearance of the deviation the better the results will be. A squint should not be allowed to be outgrown as so many lay people and even many physicians believe is possible. If treatment is begun early, that is, before six years of age—and by treatment I mean not only orthoptic training but also refraction and surgery—the possibilities for a complete recovery in respect to the angle of deviation, fusion ability, and vision are greater than if it is started at a later stage.

In the short time our clinic has been functioning some surprisingly good results have been accomplished. We are greatly encouraged to hope that in the future the necessity for surgery in squints will be greatly reduced, and that when surgery is necessary, or has been done, the final results with orthoptic training will be far superior to surgery alone.

The work in our orthoptic clinic has developed into the very definite routine outlined below:

1. *History*: A careful and accurate history is very important. From it we may learn whether to expect a congenital or an acquired strabismus. Certain diseases or injuries may lead us to suspect the presence of a paralytic and not a functional deviation. Certain definite information is to be elicited in the following manner:

A. Age of onset.

B. Mode of onset. (Occasional or constant from the start.)

C. Previous injury or illness.

D. Evidence of heredity.

E. Diplopia.

F. Previous treatment, including surgery.

2. *Examination:* The examination is divided into the following steps of procedure:

A. Objective:

1. Motility. This should be taken for each eye separately in a dark room. One eye is covered and the patient is told to look up and down, and from side to side, with the uncovered eye. If each eye can be separately abverted until the edge of the cornea touches the outer canthus, outward rotation may be considered full. The power of adversion varies considerably within normal limits. Most people can rotate their eyes inwards until the corneal edge is within one-tenth of an inch of the caruncle.

2. Power of Central Fixation. This is observed at the same time that the motility is tested. The fixing eye must be covered. If the deviating eye fixes the light without hesitation and is capable of holding fixation, we record it as good fixation. If the eye fixes momentarily but cannot hold it for any length of time, we call it fair fixation. If the eye wanders around looking for the light and is unable to fix at all, we call it poor or no fixation. At times the eye will fix or attempt to fix in an eccentric position. We always record any signs of false fixation.

3. Character of Squint. This should be carefully determined as the treatment depends always upon a correct diagnosis. A squint may be convergent or divergent, monocular or alternating, functional or paralytic.

4. Angle of Deviation. At the first visit the angle is always taken before anything else is done. It is taken with and without glasses for distance, with the fixation-light at the distance of twenty feet; it is also taken with and without glasses for near, with the light at the distance of thirteen inches.

The angle of Gamma or Kappa, although slightly different, for clinical purposes, is considered the same. This angle is formed by the intersection of the visual line and the pupillary axis, or the line which passes through the center of the pupil. This angle can be accurately measured on the perimeter. It is very important, as it may give the patient the appearance of having a convergent strabismus if the angle is negative, or a divergent strabismus if it is positive.

In measuring this angle the patient is seated at the perimeter with the eye under examination centered on the near-fixation point, the other being occluded. The exposed light of the ophthalmoscope, with the examiner's eye looking exactly over it, is carried along the arc of the perimeter until the reflection of the light appears in the center of the pupil. The position of the light on the arc indicates the angle of Gamma. When the reflex is on the outer side of the optical center, the angle is positive; when it is on the inner side, it is negative. A positive angle of Gamma is added to convergent squints and deducted from divergent squints; a negative angle is deducted from convergent squints and added to divergent squints. Positive angles are usually present in hyperopes; negative angles often appear in myopes.

In taking the motility, fixation, and angle of squint we usually employ the exposed light of the ophthalmoscope. In determining the character of the strabismus present we use the simple cover test.

B. Subjective:

1. Diplopia and Maddox Test. It is usually very difficult to produce diplopia in a squint, but with patience it is often possible. The character can then be determined, and often the deviation measured with prisms.

2. Vision. This should always betaken at the first visit with and without glasses and frequently on subsequent visits, especially if amblyopia is present.

A new patient who has never worn glasses is immediately given an atropine refraction and fitted, if necessary, with the proper glasses. When glasses have been prescribed, the patient is watched and frequently checked for a period of six months before fusion training is attempted. A patient who has worn glasses for six months or longer and whose vision is satisfactory is started with fusion training immediately. If the vision is not satisfactory, another refraction is ordered and fusion treatment begun with the new glasses.

3. Fusion Test. The fusion faculty is tested with the amblyoscope or stereoscope, using in the latter either Wells's or Sattler's cards. The amblyoscope, in our hands at least, has not proven very satisfactory. With it one cannot watch the patient's eyes or check what he sees by having him point to the figures on the cards, as is possible with the stereoscope. With the latter, the patient's eyes can be watched through

the lenses, or through an opening made in the top of the hood.

3. *Treatment of Strabismus.* A. Non-active:

1. Refraction with cycloplegia. Refraction is always done as the first step in our treatment. Orthoptic training, treatment for amblyopia, or surgery is never attempted before proper glasses have been prescribed.

2. Prisms. Prisms may be used in the lens by decentering but we do not often resort to this. Slip-overs can be worn over the patient's glasses if desired.

B. Active:

1. Orthoptic training, occlusion, and atropine.

2. Surgery. In our clinic no strabismus patient is operated upon until all possibilities of improvement with orthoptic treatment have been tried and found to be of no avail. We consider a period of three months as sufficient time to determine the impossibility of correction with orthoptics. After surgery the patient returns for further orthoptic treatment, and frequently fusion is developed and the muscle balance restored.

Routine of Orthoptic Training: As before stated, a certain definite routine is always followed with each patient. When the proper glasses, if glasses are necessary, have been worn for six months or longer, we determine first of all whether or not fusion is present and, if so, what the degree of fusion may be. The stereoscope and Wells's "A" cards are used for this purpose. With these cards we are able to determine if binocular vision, single binocular vision, or suppression is present.

If the patient succeeds in seeing the two objects on the card at the same time and is not alternating, he has binocular vision. However, we must make certain that he is not alternating by having him point while we watch his eyes. If he immediately superimposes one object over the other without alternating and is able to hold them together, he has single binocular vision. If he sees one object only, or first one and then the other by alternating, he has suppression.

If the patient sees only one object, or has binocular vision, we use prisms base out for a convergent squint and base in for a divergent squint, until he can superimpose one object over the other. If any remnant of the fusion faculty remains he learns to fuse these two objects quickly, and is frequently able to do so without prisms in three or four treatments.

When the patient has simple fusion our next step is to train him with Wells's "E" cards for the development of depth perception or perspective, and with "F" and "G" cards for the development of finer fusion. For the development of amplitude and duction we use the "H" and "I" cards, starting without prisms and later adding prisms base in for a convergent squint and base out for a divergent squint. The Sattler cards are also used for this purpose. Since they have the added advantage of being split, they can be reversed and separated.

The angle may be measured with any perimeter or Priestly-Smith tape. At our clinic we are using a special perimeter suggested to us by Dr. Leo L. Mayer and built for us by the American Optical Company. This perimeter has the advantage of having a fixed arc on a sliding stand, with the arc graduated in single degrees instead of ten as is the average one. This makes a more accurate measurement of the deviating angle possible.

Ductions are measured after the angle of deviation has been eliminated. This can be done with a rotary prism, prism bar, or the loose prisms found in the trial case.

Stereopsis also is measured after the angle of deviation has been eliminated. For this test we use an instrument built for us by Belgard-Spero Company. It is a modification of one originally introduced by Martin Cohen. The test is performed in a dark room with the patient placed at a distance of twenty feet from the instrument. One light in the instrument is stationary; the other is adjustable backwards and forwards. Between changes in the position of the adjustable light, the patient's eyes must be closed. The adjustable bar is graduated in one-half centimeters. The normal stereopsis varies from one and one-half to three centimeters.

Each patient receives a weekly treatment of from one to two hours. At each treatment the following notes are made: first, the absence or presence of suppression, in the latter case, the suppressing eye being recorded; second, the measurement of the angle with and without glasses for distance and near; third, the state of fusion, a record being made of those cards which the patient is able to see and those which he cannot; fourth, the vision of an amblyopic

patient. As long as improvement is made, treatment is continued. After fusion has been well established and the angle of deviation eliminated, or almost eliminated, they receive a set of Sattler cards and a stereoscope for the training of ductions and amplitude at home. If after a period of three months no improvement has taken place or the case is at a standstill we resort to surgery.

In our report today, we are not going into the study and treatment of amblyopia. However, the latter must be undertaken by everyone attempting the correction of strabismus. To ignore it invites failure, not only when surgery or orthoptics are attempted, but also when a refraction only is done. Amblyopia is associated with many of our strabismus cases, all monoculars having a varying degree of it. At our clinic we treat the amblyopia, if it is of a high degree, before starting orthoptic training; if the amblyopia is of a moderate degree, training is started at the same time.

The amount of amblyopia with which we can expect to develop fusion is a much discussed point. Worth states that patients having a vision of less than 20/100 in the amblyopic eye cannot be made to fuse. Other authors vary in their opinions. Some claim 20/200; others, 20/80. At our clinic we have frequently developed fusion in patients with vision in the amblyopic eye ranging from 20/200 to 6/200. We have some of the many instruments and devices which have been constructed to stimulate vision in these blind eyes, but we are not yet ready to report on their merits.

Our method of treating amblyopia in connection with the treatment of strabismus is, first of all, to prescribe the proper glasses after an atropine refraction; then an attempt is made to im-

TABLE 1. RESULTS IN PATIENTS TREATED

Patient	Age	Age of onset	Type of defect	Angle S. gl.	Angle C. gl.	Corrected R. Vision	Corrected L. Vision	Visit binocular vision developed	Fusion	Stereopsis†	Suppression	Visit Overcome	Length of Treatment	Final angle s gl.	Final angle c gl.	Remarks
1	13	..	RD	5	L0	20/40	20/25	3	3	4	RE		5mo	0	6	Good amplitude
2	18	2	LC	20	20	20/20	20/40	2	4	4	LE	11	4mo	15	9	Poor amplitude
3	12	*B	LC	25	15	20/25	20/65	1	1	3	LE		6mo	0	0	
4	10	5	LC	25	15	20/25	20/50	2	9	11	LE	12	6mo	6	9	Good amplitude
6	10	3	RC	5	10	20/65	20/20	1	1	2	RE	4	6mo	0	0	Good amplitude
7	9	4	RC	15	..	20/100	20/20	2	2	3	RE		7mo	15		
8	8	3	AC	13	3	20/25	20/25	1	1	2	RE		6mo	0		Fair amplitude
11	6	..	RC	30	25	20/200	20/50	..	0	0	RE		6mo	26	22	
12	7	2	LC	10	10	20/40	5/200	0	0	0	LE		6mo	15	0	Disorganization stage
13	10	3	AC	15	5	20/55	20/25	1	4	5	A	5	4mo	20	10	
14	9	*B	RD	10	25	20/50	20/25	2	3	3	RE		2mo	11	13	Irregular attention
16	9	4	RC	25	..	20/200	20/25	2	3	3	RE		2mo	15		Discontinued R
17	12	..	AD	10	5	20/20	20/100	1	1	1	O		6mo	0	0	Some amplitude
18	8	3	RC	40	20	20/50	20/30	1	6	8	RE		6mo	30	15	
19	8	4	AC	30	25	20/15	20/15	2	8	10	A	21	7mo	22	15	Reversed depth
20	10	..	AC	25	15	20/15	20/20	1	3	4	RE	11	6mo	9	5	Good amplitude
22	10	*B	AD	40	..	20/20	20/20	1	1	2	RA		6mo	22		
23	10	2	AD	30	20	20/20	20/20	1	1	2	RE	3	5mo	22	13	Good amplitude
24	8	2	LC	15	15	20/20	20/100	2	3	3	LE		6mo	14	6	
25	7	4	RC	15	10	20/200	20/50	1	1	1	RE	15	5mo	7	4	
27	15	..	LC	30	25	20/15	20/200	1	1	4	LE	7	5mo	22	15	
30	4	2	AC	19	14	20/25	20/30	1	1	3	LE	4	6wk	0	0	
31	19	4	AC	25	10	20/25	20/100	1	2	3	LE	10	3mo	0	0	Good amplitude
33	6	3	LC	15	5	20/30	5/200	1	2	5	LE		4mo	10	0	
37	6	*B	AD	5	20	20/65	20/100	4	6	0	LE		3mo	21	18	Worse
43	10	3	LC	15	10	20/20	20/65	1	1	1	LE	9	3mo	0	0	Good amplitude
45	8	5	LC	16	10	20/25	20/65	1	1	2	LE	4	3mo	14	0	
48	7	1	RC	28	22	20/200	20/30	1	3	6	RE		3mo	19	16	
50	8	4	LC	12	11	20/30	10/200	1	1	3	LE	3	2mo	0	0	
51	7	4	AC	38	30	20/20	20/25	2	0	0	A		2mo	37	22	
52	15	8	AC	25	..	20/25	20/25	1	0	0	A		2mo	27		
53	11	4	LC	12	9	20/15	20/200	1	2	4	LE	4	7wk	2	3	
54	8	5	AC	23	18	20/20	20/20	1	0	0	A		5wk	26	22	
55	8	5	AC	41	23	20/25	20/25	1	0	0	A		5wk	24	13	

*B=present at birth.
†Number of treatments to accomplish.

prove the vision in young children with the instillation of atropine in the fixing eye, and in older children and adults, with complete occlusion of the fixing eye from six to eight hours daily. In mild cases soaping the lens of the fixing eye may be of great benefit.

Today we are basing our statistics upon thirty-four cases only. We have, of course, treated many more than this, but some have attended very irregularly, others have been under observation for too short a period, and some are post-operative. This last group is too small and the treatment has been too short to enable us to form any statistical data concerning it.

The average length of treatment in these cases, before the elimination of the angle of deviation, was from three to six months. The shortest period was six weeks, the patient being in that case three and one-half years of age. The oldest patient, nineteen years of age, took four months. This patient was a monocular with an amblyopia of 20/100 in the deviating eye. The angle is now eliminated, with and without glasses, and the vision has been improved to 20/25.

Of the thirty-four cases reported, 10 cases or 29% are straight with and without glasses; 11 cases or 32% are improved, all degrees of fusion having been developed and the angle of deviation reduced ten degrees or more but not yet eliminated. 13 cases or 38% have not improved in respect to the angle, although many are beginning to develop varying degrees of fusion.

TABLE 2. PERCENTAGE RESULTS IN PATIENTS TREATED

Angle Eliminated	Improved	Not Improved
10	11	13
or	or	or
29%	32%	38%
With and without glasses	Angle of deviation reduced 10 degrees or more	Not much improvement in angle, but fusion developed in many

CONCLUSIONS

1. The necessity for surgery in squint patients will be greatly reduced if orthoptic treatment is carefully carried out.

2. When surgery becomes necessary or has been done the final results with orthoptic training will be much better than with surgery alone.

3. Treatment of amblyopia before surgery will assure better results.

In conclusion we would like to voice a plea to educate the public and the general practitioner to the fact that all strabismus patients should receive treatment as soon after the appearance of the deviation as possible.

6254 S. Ashland Ave.

122 S. Michigan Ave.

BIBLIOGRAPHY

Berens, Conrad & Le Grand Hardy & Elizabeth Stark: Divergence Excess. Trans. Am. Opth. Soc., 27: 263-275, 1929.

Cohen, Martin: A Device for the Examination of Distant Stereoscopic Vision for Form and Colors. Archives of Ophth. 48: 142-143, 1919.

Guibor, George P.: Possibilities of Orthoptic Training. Arch. of Ophth., 11: 433-61, 1934.

Sattler, C. H.: Neue stereoskopische Bilder fur schielende Kinder. Klin. Monats. f. Augenheil., 81: 182-184, 1928.

Wells, David W.: Stereoscope n Ophthalmology. Globe Opt. Co., Boston, 1918.

Worth, Claud: Squnt. P. Blakiston's & Co. Philadelphia, 1903.

DISCUSSION

Dr. Thomas D. Allen (Chicago): This paper by Doctor Bressler and Doctor Chapman is a very interesting one. Although based on rather short clinical study, it nevertheless points the way to better handling of these cases of squint. It also confirms the work done by other squint clinics in this country and abroad.

It changes the emphasis in the handling of all squint cases from a cosmetic cure to a functional cure. As the result of their work, these authors have been able to improve the sight, where vision has been diminished through lack of use, and cause a coordination of the eyes in the production of depth perception.

In our office, we are having the same results as Doctor Bressler describes. We feel that when we establish a mental picture that is slightly different from the picture seen by each eye alone, that the very formation of the mental picture will assist in holding the eyes in their proper place, and also add to their function that very desirable ability to estimate depth.

We feel that this work will also stimulate the profession to the point where we will not be satisfied with the results previously obtained, but will strive ever harder to improve our work.

Let me again congratulate the essayists.

DISCUSSION

Dr. J. L. Bressler (closing): I would like to thank Dr. Allen for his kind words. We have not gone very deeply into detailed statistics as yet, but I think from one and one-fourth to three or three and a half diopters would be the answer to your question. The work at the clinic takes considerable time and routine, but if we can manage it next year we intend to go into the details of amblyopia and hyperopia when we compile our statistics.

THE ALLERGIC MANAGEMENT OF VASOMOTOR RHINITIS

MICHAEL ZELLER, M.D.
CHICAGO

In considering the management of vasomotor or hyperesthetic rhinitis, it is important first to differentiate the condition from other diseases with which it is often confused. Of these the recurring cold and sinus disease are most important. Occasionally mechanical factors and in rare instances, cerebrospinal rhinorrhea may simulate the condition. The presence of allergic manifestations such as hay fever, asthma, urticaria, eczema, and certain types of headache and colitis in the patient or his family, the history of symptoms of sneezing, nasal discharge and congestion, itching of the nose, roof of the mouth and ears, loss of smell and lacrymation and, less frequently headaches, together with examination by an otolaryngologist supported by laboratory procedures will usually make the diagnosis. Further allergic management is then directed toward determining the specific factors causing these symptoms. This is done by analysis of the occurrence of symptoms, skin, nasal tests and dietary manipulation.

The exciting or specific allergens may be included in one or more of several groups, namely, the ingestants, inhalants, physical and bacterial factors. Each of these or a combination of the various groups is capable of producing symptoms in a sequence which carefully analyzed will serve to classify the particular case in question. Food sensitive individuals may have symptoms immediately after smelling a given food, but more frequently they follow within a few minutes to several hours after ingestion. In some individuals there is a certain threshold for a given sensitivity. Wheat, for instance, may be tolerated every other day, but if taken every day results in symptoms. An individual may eat beans once daily with impunity, but if taken twice on the same day symptoms develop. In instances of multiple food sensitivity constant symptoms may be produced even though the same food is not eaten every day. Chocolate, for instance, may cause symptoms on a given date to be followed by symptoms on the following day due to beans. There may be any combination of symptom production, and it is only upon careful analysis, proper elimination, and continued observation that the food factors can be determined.

Next to foods, inhalants rank most important in symptom production and in cases they combine with ingestants to confuse and complicate the clinical picture. Of the various inhalants house dust, which is a combination of several allergens, is very important. House dust individuals are usually worse at home, particularly on cleaning days, and on damp days, worse during the winter, and find relief in the open air. Another important inhalant is orris root the basic ingredient of most perfumed cosmetics. It is of particular significance in women, but is important in men as well. Patients sensitive to orris root are usually worse in crowds, i.e., in churches, theatres, stores and other places where people congregate. Other inhalants of importance, but not so frequently a cause of symptoms are feathers, wool, boxwood, various odors and smoke.

Heat and cold sensitivity has not played as important a role in these cases as others report. It is true that many cases of vasomotor rhinitis were markedly influenced by change of temperature, but this was shown to be a secondary manifestation of a primary sensitization. The allergic mucus membrane becomes congested and swollen, and therefore more susceptible to temperature changes which then produce symptoms. The influences of temperature changes disappear so often after the removal of the primary allergen that the diagnosis of heat and cold sensitivity should be made only when no other allergen can be demonstrated.

Except for the clinical history, skin testing is perhaps the most important aid in determining a particular allergen. Yet, if one were to rely on skin tests alone the diagnosis could not be made in about 50 per cent of the cases due to foods and 20 per cent of those due to inhalants. The impression that skin tests will make the diagnosis, that positive tests are proof of clinical sensitization or that negative tests eliminate clinical sensitization is erroneous. Frequently patients are tested and when the tests prove to be negative the case is regarded as being non-allergic. An individual may be sensitive to sev-

*Read before Section on Eye, Ear, Nose & Throat at annual meeting of Illinois State Medical Society, at Springfield, May, 1934.

eral allergens and yet fail to react to testing extracts. On the other hand, there often are a number of positive tests that may have no clinical significance. A positive test may offer a valuable clue, but it is only after clinical demonstration that a given allergen is to be considered etiologic in producng symptoms.

Scratch tests should be done first followed by intradermal tests as needed in each case. At all times the possibility of reactions from testing should be borne in mind. General or local reactions may follow the application of excessive numbers of allergens by either method of testing. In selected cases the local application of the suspected allergen, either directly onto the middle turbinate by means of an applicator or by spray, may be of diagnostic aid. This procedure is very limited as only one allergen may be applied at a time.

The examination of the nasal secretions aids in establishing the allergic nature of vasomotor rhinitis. The secretions are usually clear, watery or mucus in character, and upon microscopic examination eosinophiles are often increased. However, the absence of eosinophiles does not rule out allergy, nor does the presence of eosinophiles necessarily indicate allergy. Lindsay and Walsh[1] in a series of cases report 14.9% as having a high eosinophilia without allergic manifestations. Repeated smears, preferably taken from the mucus part of the secretion, may be necessary to demonstrate eosinophilia.

After an analysis of the history and the various tests as described, the treatment is then directed toward the establishment of an etiologic diagnosis. This is done by exclusion of the suspected foods, contactants or inhalants and subsequent manipulation of these factors until the patient is symptom free. If there are multiple positive allergens operating, or when skin tests are of no value, the diagnosis will be more difficult, but can usually be made by clinical study of the relationship of the patient's symptoms to the dietary and general habits. When the offending allergens have been determined it is usually easy to eliminate them and effect relief of the rhinitis.

There are, however, a group of allergens which, due to their universal presence or because of the impossibility to effect complete elimination, may produce symptoms indefinitely in a sensitive individual with low tolerance. In these instances hypodermic injections of the allergens involved, supplemented by elimination, will increase tolerance to the allergen in question and effect relief of symptoms. This form of therapy is particularly applicable to house dust, orris root and pyrethrum sensitive individuals. In some instances autogenous house extracts prepared from the patient's own house or from a certain piece of furniture may be more effective. Tolerance to foods may be increased by a period of complete elimination followed by oral desensitization.

Frequently a patient who has been symptom free over a period of weeks or months will suddenly develop an acute exacerbation of nasal symptoms. This may be due to a violation of the dietary regime or exposure to a sensitization not previously encountered, such as pollens occurring from spring to fall, but not during the winter.

REPORT OF CASES

Following are typical histories:

Case 1—Mrs. Elizabeth K., aged 29 years, housewife, complained of sneezing of four years duration, worse upon arising and continuing throughout the day, often paroxysmal and usually numbering from 75 to 100 sneezes a day. Accompanying this was itching of the nose so severe as to prevent sleep. A watery nasal discharge was constantly present requiring from 15 to 20 men's handkerchiefs daily. Nasal congestion alternating from side to side but bilateral at times accompanied the rhinorrhea. Smell and taste were present only at infrequent intervals. A septum operation and the extraction of several teeth resulted in no improvement. There was no history of allergy in the family. Scratch tests revealed reactions to veal, poppyseed, nutmeg and black walnut. Intradermal tests gave reactions to salmon, eggplant, grape, raspberry, pork, peach, pear, rhubarb, lime, elm orris root, house dust, grape fruit, duck feathers and pyrethrum.

It has been found that pork will produce itching of the nose in from 3-8 hours, and of such a severe degree as to prevent sleep. The ingestion of orange juice results in a rhinorrhea within ten minutes. Raspberries cause nasal congestion and sneezing within 15-20 minutes. Meanwhile the patient has received hypodermic injections of house dust and orris root extracts. This has increased her tolerance to these allergens so that she is now able to do house cleaning without symptoms, whereas previously, violent sneezing and nasal congestion developed within a few minutes after exposure. Within a few weeks after the patient became symptom free, she observed that the extremes of heat and cold, which formerly resulted in sneezing and

congestion, no longer produced this effect. The patient is now entirely well except when she is exposed to one of the specific allergens.

Case 2—Harry M., aged 53 years, a married minister. He complained of having a constant "cold" of several years duration, sneezing 40-50 times a day, watery nasal discharge requiring 12-15 handkerchiefs daily, nasal congestion, and loss of taste and smell. The removal of his tonsils and adenoids afforded no relief. His family tree exhibited various allergens.

Following are the findings in the nose as given by Dr. Whittel:

"The nose was completely blocked by swelling, pale and moist turbinates. No free pus was seen, but a thin watery secretion was present in abundance. Post nasal examination was similar to anterior rhinoscopy and showed no polyps. The septum was slightly deviated to the right."

House dust to which the patient gave a four plus reaction was eliminated together with corn, rice, eggs, peas and cherries. Within two weeks the patient reported 80% improvement and at this time the rhinologist reported as follows: "The turbinates are more nearly normal in size and color, secretion has greatly diminished and the patient is breathing freely through both sides. The septum is definitely deviated to the right. Pharynx in both examinations has been normal."

This patient's symptoms disappeared entirely and could be reproduced only upon exposure to the dust in his study. The foods to which he gave positive skin tests resulted in no symptoms when ingested. The influence of changes of temperature disappeared entirely with removal of the etiologic allergens.

Case 3—Dorothy G., aged 8 years, school girl. She complained of sneezing, coughing and nasal congestion of two years duration. On the basis of skin tests, corn, beans, fish and nuts were removed from the diet. Subsequent observations revealed that the ingestion of corn syrup and mayonnaise containing corn oil caused sneezing. Oranges and nuts resulted in congestion and running of the nose. These foods when eliminated effected complete relief of symptoms.

Case 4—Caroline P., aged 28 years, single. She had fall hay fever for nine years and two years ago developed paroxysms of sneezing, nasal congestion and running of the nose. These symptoms have persisted since and are worse from August until frost. There is no history of other allergy in the family. Positive reactions were obtained to the ragweeds, wheat, buckwheat, corn, oats, pumpkin, cucumber and nuts. Nasal symptoms cleared up completely within five days after exclusion of these foods, but could readily be reproduced by ingestion of wheat within three hours and by nuts within 15 minutes. A single ingestion of nuts or wheat caused symptoms with gradual diminution for five days. Corn and oats produced nasal symptoms within three hours after ingestion and persisted for 24-36 hours. Buckwheat and cucumbers to which she also reacted, caused no symptoms. Treatment with ragweed pollens is being given for the fall pollinosis.

There are certain cases which defy all allergic management, and others in which the improvement is not sufficient to afford comfort. These groups will respond to non-specific therapy in some instances, and of the various measures, it has been found that calcium alone or calcium with thyroid as advised by Novak and Hollender[2] to be more consistently effective than any other form of therapy. Occasionally antuitrin S, vaccines, and foreign protein preparations produce temporary relief. Local treatment, such as alcohol injections into the sphenopalatine ganglion as advised by Sluder,[3] coagulation of the turbinates,[4] cauterization by means of silver nitrate,[5] radium applications,[6] and other procedures are indicated in selected cases, but should be used only in collaboration with a competent otolaryngoloist.

In a recent review of 132 cases of asthma as related to nasal pathology, Vaughan[7] reports 40 as having had previous nasal treatment, and of these 35% gave good results with allergic management. Of 54 cases with no treatment of existing nasal pathology, 59.3% gave good results treated allergically. In 38 cases showing no nasal pathology 68.4% gave good results with allergic treatment. These figures emphasize the need of conservatism in resorting to radical surgical procedures, but in selected cases the removal of polyps or the correction of obstruction

ALLERGENS IN VASOMOTOR RHINITIS
ORDER OF CLINICAL IMPORTANCE
IN A SERIES OF 44 CASES

Wheat
House Dust
Orris Root
Beans
Chocolate
Orange
Potatoes
Tomatoes
Eggs
Bananas
Pork
Rye
Milk
Nuts
Fish
Spinach
Corn
Rice
Beef
Cantaloupe
Feathers
Barley

ROLE OF SKIN TESTS IN ALLERGIC VASOMOTOR RHINITIS IN A SERIES OF 44 CASES

Allergen	Skin test positive Clinically positive	Skin test negative Clinically positive
Wheat	5	8
House Dust	8	4
Orris Root	9	0
Beans	4	1
Chocolate	3	4
Orange	2	5
Potatoes	3	2
Tomatoes	0	4
Eggs	0	3
Bananas	0	3
Pork	3	0
Rye	3	0
Milk	0	2
Nuts	2	0
Fish	2	0
Spinach	2	0
Corn	2	0
Rice	2	0
Beef	2	0
Cantaloupe	0	2
Feathers	0	2
Barley	2	0

should be done. It is of paramount importance at all times to bear in mind that vasomotor rhinitis is a constitutional disease the correction of which requires close collaboration between the allergist and otolaryngologist to obtain the best results.

REFERENCES

1. Lindsay, J. R.; Walsh, T. E.; Arch. Otolaryngology, 17:783, 1933.
2. Novak, F. J.; Hollender, A. R.: J. A. M. A., 81:2003, 1923.
3. Sluder, G.: Headache & Eye Disorders of Nasal Origin, C. V. Mosby, 1920.
4. Hansel, F. K.: Trans. Am. Laryn. Oto. & Rhi. Soc., 38:511-518, 1932.
5. Haworth, Walter: Proc. Royal Soc. Med., 26:405-416, 1933.
6. Bernheimer, L. B.: Ill. Med. Jour., 62:547-549, 1932.
7. Vaughan, W. T.: The Journal of Allergy, 4:1-27-135, 1933.

DISCUSSION

DR. L. UNGER, Chicago: I am very much interested in Dr. Zeller's paper and in Dr. Novak's discussion, but I think Dr. Novak is wrong, in a way, in calling allergy a specialty. It is really a branch of internal medicine and to be a good allergist one must be a good internist. I do not believe that specialists in nose and throat work or in dermatology can become good allergists unless they are also proficient in the chest work so vital to the diagnostician.

Dr. Zeller did not have time to mention the fact that bronchial asthma is a common complication of vasomotor or hyperesthetic rhinitis. Regarding nasal operations in allergic nostrils or allergic asthma, I believe all allergists are agreed on the following points: Severe trouble, such as a well established sinusitis, marked nasal obstruction and large polyps should be operated on but it must be understood that these conditions will probably recur unless the allergic end of the problem is given proper attention. Polyps are the result, not the cause of allergy in most cases; they merely represent a localized edema similar to the edema of hives and the edema which causes most of the obstruction of the asthmatic.

Patients and doctors should be better informed as to where the patient meets those substances (antigens) which bring on allergic conditions. For example, a horse hair mattress may cause symptoms in the susceptible individual even though there is no contact with horses. Removal of such mattresses has cleared up many such patients.

Dr. Zeller is correct when he states that skin testing is not a function of a laboratory. These tests require the experience of a trained physician, one who can appreciate differences in the skins of his patients and one who can correctly correlate positive tests with clinical findings. Three to four hundred skin tests by a laboratory technician are of very little value and they are frequently quite misleading. Clinical trial is very important. If a patient gives a positive test for egg, remove eggs and egg-containing foods from the diet and see if the symptoms clear up. If they do, return eggs to the diet and see if symptoms return.

When many positive tests are obtained, e. g., twenty or thirty, it is sometimes quite difficult to say which are important. Passive transfer (Prausnitz-Küstner) may help here: Take about 10cc of blood from the patient, centrifuge the blood and inject about .10cc in each of twenty or thirty different sites on an arm or leg. After two or three days inject each of these with a different extract of an antigen, e. g., horse dander. The other arm is also injected with the same antigens and is the control arm. A negative Wassermann is, of course, essential.

The two main principles of correct treatment of all allergic conditions should be emphasized: 1. Complete removal of all offending substances and 2. Desensitization to those substances which are important and which cannot be entirely avoided, e. g., ragweed pollen, horse dander, house dust, eggs, wheat and milk.

The following is the revision of the closing discussion by Dr. Zeller.

DR. MICHAEL ZELLER, Chicago (closing):

In the past year there has been considerable literature emphasizing the significance of heat and cold sensitivity. This has not been as important a role as reported by some. In many instances a careful analysis of the patient's symptoms will lead to the discovery of other allergens, which when removed, is followed shortly by normal tolerance to heat and cold. There are some cases in whom the exciting allergens cannot be determined and must be classified as heat and cold sensitivity but this number is being reduced considerably with thorough allergic study.

THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS

JOHN E. McCORVIE, M. D., and
M. POLLAK, M. D.
PEORIA, ILL.

That the results in the treatment of pulmonary tuberculosis depend on early diagnosis is so generally known that one rather hesitates to repeat it before a medical audience. Yet the fact remains that the majority of patients admitted to tuberculosis sanatoria throughout the country are in the far advanced stage of the disease at the time of their entry.

Miss Whitney,[1] statistician of the National Tuberculosis Association, states that in 1931: "The stage of the disease of the patients with frank pulmonary tuberculosis, as reported by 274 institutions, shows that 16% were admitted in the minimal stage, 30% in the moderately advanced, and 54% in the far advanced stage. Compared with the earlier figures of Drolet, these data are not encouraging. The same low percentage of minimal cases, 16%, were admitted in both years, but in 1931 the percentage of far advanced cases is even higher, being 54%, as compared with 50% in 1926."

We have admitted to our institution during the past four years 324 cases with pulmonary tuberculosis of the adult type. Of this number, 123, i. e., 37.96%, were in the minimal, 56 or 17.20%, in the moderately advanced, and 145, or 44.75%, were in the far advanced group. These figures compare favorably with those cited above, and show that our cases are diagnosed earlier than in the general average throughout the country. It should be emphasized here that we do not select our cases for admission and that they are admitted irrespective of the stage of their disease.

The large percentage of admissions in the far advanced group is responsible for the fact that according to Miss Whitney,[1] "For 264 institutions reporting, they had cared for 154,437 patients at their death. The total estimated number of deaths on this basis in tuberculosis institutions would be 246,600, or eliminating readmissions, 19% of patients admitted, are discharged by death."

Under these conditions, it is of great importance to investigate and try to find the reasons why this large percentage of patients come to institutions only in the late stage of the disease, when in a great number of instances medical care is of very little avail.

For the purpose of such investigation we have collected pertinent data in one hundred (100) cases. These cases comprise the patients who during the time of this study have been under the care of our institution and our out-patient pneumo-thorax department, which is conducted for the care of patients discharged from the Sanatorium.

It is obvious that under these conditions the selection was not done entirely at random, and that the percentage of far advanced cases is considerably larger than had these patients been selected consecutively on admission.

According to Table 2, 53% of this group was classified as far advanced, while the average percentage of far advanced cases among our admissions during the past four years was only 44.75%.

Table 1 gives the age groups and sex of these patients, showing that the largest group, 49%, is comprised of young adults between 21 and 30 years of age, and that the females are in preponderance in the ratio of 55 to 45; the youngest of our patients was 13 years old and the oldest, 69 years of age.

Table 2 presents the classification of these patients, with 22% in the minimal, 19% in the moderately advanced, 53% in the far advanced stage, and 6% with pleurisy and effusion. This table also shows that in 68 of these cases the sputum was positive on admission, while in four cases it was unknown; in the remaining cases, including the 6 pleural effusions with no or scant expectoration, it was negative. The cases in which the sputum was unknown refer to readmissions, in which the former records are not complete.

It is of significance to note that of the 90 cases with definite sputum findings, in 68 i. e., 84.04%, the sputum was positive for tubercle bacilli. It is to be borne in mind that the great majority of these sputum examinations have been made at the Sanatorium where it is a practice to examine 24-hour specimens on 5 to 8 different days before we accept negative results. In these instances guinea pig inoculations are made as a matter of

From the Peoria Municipal Tuberculosis Sanitarium
Read before Section on Medicine, Illinois State Medical Society, at Springfield, May 16, 1934.

routine and only if these have proven negative is the case pronounced as sputum negative.

We do stress this routine, because it happens only too often, when sputum examinations are done, that the patient is not properly instructed how to collect his specimen. Very often also the examining physician is satisfied with only one sputum examination, although it is well known that a single specimen of a sputum positive case might be found negative on certain occasions. It is also to be emphasized that for the microscopic examinations the proper particles of the sputum should be chosen. Sahli[2] takes definite stand against the use of anti-formin method of sputum examination, because he believes that by using this method, the laboratory technicians are only too apt to neglect the proper selection of sputum particles.

Considering the past history of the patients in our group, we were interested in the outstanding symptoms at the onset of the disease, so far as these could be determined in retrospect at the time of admission. Table 3 presents our findings. From this point of view the large number of cases with acute onset, oftentimes simulating pneumonia or an ordinary cold accompanied very often by cough or expectoration, is of the greatest significance. Forty-two cases belong in this group. It is reasonable to assume that had repeated sputum examinations been made, a positive result would have been obtained in many of these cases at the time these symptoms appeared.

Hemoptysis, as the first symptom, was found only in 7 cases. It has to be emphasized, however, that in an additional 13 cases, hemoptysis occurred in the later course of the disease, and was the symptom which caused the patient to seek medical advice. In an additional 10 cases hemoptysis occurred prior to the time a diagnosis of tuberculosis was made. The total number of cases, therefore, in which hemoptysis occurred prior to the time diagnosis was established, and in which the history of hemoptysis was helpful in establishing the diagnosis was 30.

Fatigue alone as the outstanding symptom at the onset of the disease was found only in 18 cases. This is undoubtedly due to the fact that a great proportion of our cases had an acute onset. Fatigue, however, frequently accompanied the other symptoms.

Cough, with or without expectoration, was an outstanding symptom at the onset in 23 cases. This points to the fact that in a majority of cases cough or expectoration is a rather late symptom. This group does not include the cases with acute onset in which cough or expectoration was fairly frequent.

In the miscellaneous group, comprising 10 cases, hoarseness was found three times, pain in the chest twice, the latter two being cases of pleural effusion. In one instance the diagnosis was accidental, the patient being examined for some other disease. A rectal fistula was found in one case and abdominal pain in another. In this last case the symptoms of intestinal tuberculosis were in preponderance, and this patient died of ruptured multiple tuberculous intestinal ulcerations. No initial symptoms were found in one of the contact cases.

It is to be emphasized that in the contact group, comprising 10 cases, which were examined because a member of the family was suffering from pulmonary tuberculosis, symptoms pointing to the existence of the disease have been found by eliciting their history.

We were interested to learn how much time elapsed after the first symptoms appeared before the patient sought medical advice. Our findings in this respect are given in Table 4. From this table we find that only 43 had gone to a physician within one month after the appearance of symptoms. In the remaining group, 35 went to a doctor in the interval of 1 to 6 months, and in eleven instances medical advice was sought only after one year or more had elapsed from the appearance of symptoms. This table points to the fact that the early symptoms of the disease are very often not severe enough to incapacitate the patient so much that he is compelled to seek medical advice. It is evident from this table that we cannot rely on the presence of symptoms if we intend to find cases at the early stage of the disease. Findings like those shown in this table point to the necessity of periodic health examinations with especial reference to pulmonary tuberculosis.

The length of time needed to establish the diagnosis after the patient has sought medical advice is of great significance. Our findings in this respect are given in Table 5. This table emphasizes the fact that even in the far advanced group where the symptoms have naturally been more pronounced, in 29 cases, among the 53, i. e. in 54.71% of this group, more than one

month was needed to establish the diagnosis, and in eleven instances it has taken over a year to reach the conclusion that the patient was suffering from pulmonary tuberculosis. In many of these instances the patient was reluctant to return to his physician after the first visit, even when so instructed, or called on him only spasmodically so that the medical observation and diagnosis could obviously not be thorough.

In contrast to this, in the minimal group in 14 cases out of 22, i. e. in 63.60%, and in 9 cases out of 19, in the moderately advanced group, i. e. in 47.36% the diagnosis was established within one month.

It would seem to us that at times when the symptoms are rather vague and indefinite, as in the minimal group, the existence of pulmonary tuberculosis is relatively more often considered than the in the far advanced group when the symptoms of the disease might apparently be masked by the existence of some other condition, as bronchitis, or colds.

The establishment of the correct diagnosis will greatly depend upon the diagnostic methods used at the time of examination. Table 6 gives the facts pertaining to this question. Studying this table, we find that in 26 instances, comprised of ten contact cases, and sixteen who were referred by their family physician, the diagnostic clinic of our Sanatorium was instrumental in the establishment of a diagnosis. This fact points to the value of diagnostic Chest Clinics. In the remaining 74 cases where the diagnosis was established by the family physician, in 50 cases, i. e. in 67.43%, the x-ray was used, and in only 31 cases, i. e. in 41.89%, was a sputum examination made. In many of these cases both methods were employed.

These two facts tend to show that the x-ray apparently is more frequently used in diagnosing pulmonary tuberculosis than sputum examinations. It is evident that sputum examinations, the oldest of our auxiliary methods in the diagnosis of pulmonary tuberculosis, and the one which when positive, establishes the diagnosis with a 100% accuracy, are neglected.

The importance of x-ray examinations in the early diagnosis of pulmonary tuberculosis cannot be over-emphasized. Through them, changes in the lungs can be detected sooner than positive symptoms or physical signs of the disease appear. Their popularity, therefore is encouraging and shows a desirable trend in the use of our diagnostic methods.

The study of table 7, which presents the time interval elapsed between the first visit to a doctor and the time of sputum examination, shows that of the 31 cases where a sputum examination was made, in only 11, i. e. in 35.48% was the examination carried out within one month after the visit, and that in 5 cases over one year elapsed before this examination was done. It is evident therefore, that even when sputum examinations are done, these are not resorted to early enough.

DISCUSSION

It is obvious from the data here presented that a number of factors are responsible for the fact that cases of pulmonary tuberculosis come only late under proper medical care at a time when our present day therapeutical methods are often of no avail. These factors might be grouped under three headings: 1. the nature of the disease, 2. the indifference and ignorance of patients, and 3. the delayed utilization on the part of the physician of well approved diagnostic methods.

The first symptoms of tuberculosis are either insidious, causing no alarm by their appearance, or they manifest themselves in the form of acute everyday diseases, like colds, bronchitis and other conditions when one is more apt to think of the passing nature of the illness than of the presence of tuberculosis. These acute symptoms might seem too trivial to the patient to seek medical advice, or in the case such medical advice is sought, the attending physician might be rather apt to overlook the presence of tuberculosis, especially so because these symptoms disappear in a rather short time.

The indifference of patients in seeking medical advice is often very surprising. It is of significance that for three of our patients even the occurrence of repeated hemoptyses was not enough to compel them to see a doctor. The further fact that in 35% of our cases 1 to 6 months elapsed, and in 11% more than one year, after the symptoms had appeared, before medical attention was sought, speaks in itself of the extent of this indifference.

While the factors referred to above cannot be changed to a very great extent directly by the medical profession, aside from carrying on a general educational campaign among the public,

much can be done in ameliorating the factors belonging to the last group. It is obvious that sputum examinations should be resorted to more often than is done at present. It has become a routine diagnostic procedure whenever a patient is examined to determine the blood pressure, analyze the urine, very often to make a complete blood count and differential count, Wassermann or Kahn tests whether or not there are symptoms pointing to the necessity of these examinations, although these frequently yield negative results when their need was not anticipated by the history or the physical signs in a given case. Why is it that 52 years after Robert Koch has irrefutably proven the etiological importance of the tubercle bacillus, sputum examinations have not become a routine part of our diagnostic methods whenever expectoration exists? Yet it is obvious to everyone who is versed in the diagnosis of tuberculosis that routine sputum examinations, done whether tuberculosis is suspected or not, will detect the existence of tuberculosis very often in cases where we least expect it.

In his address to the Annual Meeting of the Illinois Tuberculosis Association on April 30, 1934, Dr. Kennon Dunham emphasized the fact that routine sputum examinations would do far more for the eradication of pulmonary tuberculosis than any of our other diagnostic procedures.

The emphasis placed upon the importance of routine sputum examinations is not intended to minimize to the slightest degree the importance of other diagnostic procedures, especially of x-ray examinations. Neither does it intend to convey the thought that we should wait in establishing the diagnosis of pulmonary tuberculosis until tubercle bacilli appear in the sputum. It merely wishes to call attention to the use of an old, reliable diagnostic method which at present is not fully utilized.

The infrequent use of sputum examinations is the less understandable because their use does not entail any expense on the part of the physician or of the patient since the establishment of public health laboratories in which sputum examinations are carried out free of charge.

CONCLUSIONS

1. In order to ascertain the reason why a large number of patients enter tuberculosis sanatoria in the far advanced stage of the disease, the history of 100 cases was studied, and pertinent facts are presented.

2. Among the reasons of this late entry are:

a. The insidious onset of the disease with trivial symptoms, not severe enough to compel the patient to seek medical advice.

b. The indifference of patients toward severe symptoms, such as hemoptysis, prolonged cough and fatigue.

c. The masking of symptoms of tuberculosis by symptoms of acute respiratory diseases.

d. The insufficient use of available diagnostic methods, such as x-ray and especially sputum examinations.

3. It is believed that by making proper sputum examinations a routine diagnostic procedure in every instance where expectoration exists, irrespective of whether tuberculosis is suspected or not, cases of pulmonary tuberculosis would be diagnosed more frequently, and in the earlier stage of the disease than is done at present.

4. Periodic health examinations, employing chest radiograms, establish the diagnosis of pulmonary tuberculosis at the earliest stage when neither subjective nor objective symptoms are present.

REFERENCES:

1. Tuberculosis Hospitalization in the United States. Jessamine S. Whitney, National Tuberculosis Association, 1933.

2. H. Sahli: Lehrbuch der Klinischen Untersuchungsmethoden, Vol. II, pp. 244.

TABLE 1—AGE GROUPS

12-20 Years	21-30 Years	31-50 Years	51 and over Years
10	49	34	7
Male	45	Youngest	12 years
Female	55	Oldest	69 years

TABLE 2—CLASSIFICATION OF PATIENTS

	Minimal 22	Mod. Adv. 19	Far Adv. 53	Pleural Effusion 6
Sputum				
Positive	2	16	50	0
Negative	18	3	1	6
Unknown	2	0	2	0

TABLE 3—OUTSTANDING SYMPTOMS AT ONSET

Symptoms	Min.	Mod. Adv.	Far Adv.	Pleural Effusion	Total
Acute respiratory....	6	9	23	4	42
Fatigue	5	4	9	0	18
Hemoptysis	3	1	3	0	7
Cough with or without expect.	6	3	14	0	23
Miscellaneous	2	2	4	2	10
Total	22	19	53	6	100

TABLE 4—FIRST VISIT TO A DOCTOR AFTER APPEARANCE OF SYMPTOMS

Classification	Within 1 Month	Within 6 Months	Within 1 Year	Over 1 Year
Minimal	8	4	6	4
Moderately advanced	7	9	2	1
Far advanced	24	20	3	6
Pleural effusion	4	2	0	0
Total	43	35	11	11

TABLE 5—TIME INTERVAL BETWEEN FIRST VISIT AND DIAGNOSIS

Classification	Within 1 Month	Within 6 Months	Within 1 Year	Over 1 Year
Minimal	14	5	2	1
Moderately advanced	9	6	3	1
Far advanced	24	15	3	11
Pleural effusion	3	2	0	1
Total	50	28	8	14

TABLE 6—DIAGNOSTIC METHODS USED IN ESTABLISHING THE DIAGNOSIS

Classification	Sputum Exam.	X-ray	Physical Only	Contact	Referred to Clinic
Minimal	3	8	2	5	7
Moderately advanced.	8	13	0	3	1
Far advanced	19	24	7	2	8
Pleural effusion	1	5	0	0	0
Total	31	50	9	10	16

TABLE 7—TIME INTERVAL BETWEEN FIRST VISIT TO A DOCTOR AND SPUTUM EXAMINATION

Classification	Within 1 Month	Within 6 Months	Within 1 Year	Over 1 Year	No Sput. Exam.
Minimal	1	2	0	0	7
Moderately advanced.	4	2	1	1	7
Far advanced	6	8	1	4	24
Pleural effusion	0	1	0	0	5
Total	11	13	2	5	43

DISCUSSION

Dr. George T. Palmer (Springfield): Mr. Chairman and Gentlemen: The fact that fifty-two years have elapsed since the discovery of the tubercle bacillus and yet that we still listen attentively to the discussion of the diagnosis of tuberculosis, is indicative that we have by no means attained perfection in diagnosis. In the twenty-five years that I have been in tuberculosis work, I have seen numerous short cuts and cocksure methods of diagnosis which have been offered enthusiastically and then have been discarded or given their proper place of moderate usefulness.

It is very interesting, but it is not surprising that a paper of this kind, emphasizing the use of old and tried methods, should come from men like Dr. Pollak and Dr. McCorvie. I think you know that there are only three tuberculosis sanatoria in Illinois that have been fully approved by the American College of Surgeons. Dr. Pollak is at the head of one of the two public sanatoria in the State so approved.

Consequently, we may say that the technical methods of Dr. Pollak's sanatorium must be superior to those of most of the other sanatoria. Further, Dr. Pollak is doing better x-ray work than I have seen in other sanatoria, so much so that we have borrowed x-ray films from Dr. Pollak to be used as models in our own x-ray department. Coming from an institution where the technical excellence is unquestioned, I feel that it is particularly significant that the speakers emphasize the importance of the old, tried and now greatly neglected procedure of sputum examination.

Dr. Pollak reminds us that the diagnosis of tuberculosis up to this time has been disappointing and he calls attention to the importance of the case history and of repeated sputum examination. Our experience, in our own Sanatorium, has been very much like that of Dr. Pollak. Seventy per cent. of our patients, all with well-defined tuberculosis, have never had sputum examination.

Dr. Pollak is right in saying that a sputum examination should be a part of every general examination, as much a part as blood pressure or urinalysis, and that if this were done we would not have anything like as many far advanced and dying consumptives as we now have.

It seems to me that the most effective and least expensive campaign that could be carried out against tuberculosis would consist of the routine sputum examination of every man, woman and child who coughs. This would bring to light a larger number of open cases of tuberculosis and would certainly come closer to striking at the roots of the tuberculosis problem than anything else we could do.

All of us who have been engaged in tuberculosis work over a long period of time recognize that to succeed in diagnosis we must employ every available means,—case history, physical examination, x-ray, tuberculin test, sedimentation test and repeated sputum examinations.

In this day for a man to minimize the importance of the x-ray is to admit that he is not skillful in the use of x-ray; for a man to minimize the importance of the physical examination is simply an admission that he is not familiar with the technique and possibilities of physical examination.

We have had numerous cases in which the physical examination has failed and in which the x-ray has solved the problem. Incidentally, we have had those cases in which both physical examination and x-ray have failed and yet where the sputum test has settled the question. (Applause.)

Dr. M. Pollak, Peoria: At first I would like to thank Dr. Palmer for his very flattering remarks about our institution.

The early diagnosis of pulmonary tuberculosis is in the hands of the general practitioner. People go to see him at first and he is the one who has to recognize it and refer the case for Sanitarium care.

I would like to emphasize again—because we cannot often enough—that sputum examinations be made every time we have a patient who coughs or expectorates. We are very often surprised in taking a case which is diagnosed as pneumonia, common cold or bronchitis and examine properly the sputum to find tubercle bacilli.

Another important thing is that the patient be instructed to collect a twenty-four hours' specimen of the sputum—from morning to the following morning,

both mornings included—because if you say to a patient "Send in your sputum to the laboratory," very often all the patient will do will be that he will remember it during the day and spit in the specimen bottle some saliva and you get the report back from the laboratory that the sputum is negative.

Moreover, we cannot be satisfied with one sputum examination alone, but these examinations have to be done repeatedly. I am convinced that if we would follow out this routine; especially so in the general hospitals where sputum examinations could be done routinely, just the same way as urine examinations and blood counts are done routinely, on every patient, we would get our patients under treatment far earlier that we do it today.

I thank you.

ALLERGY IN GENERAL PRACTICE*

SAMUEL M. FEINBERG, M. D., F. A. C. P.
Assistant Professor of Medicine, Northwestern University Medical School and Attending Physician, Cook County Hospital.
CHICAGO

If the entire population of the state of Illinois were afflicted with one chronic ailment the physicians in the remainder of the country would certainly register an active interest in it. Further, these doctors would busy themselves in study and practice to fit themselves to manage such an important disease. In the United States there are some seven or more millions of individuals who are suffering from one or more of the allergic conditions. There are two millions or more of hay fever sufferers. There are probably close to a million asthmatics. There are numerous cases of hyperesthetic rhinitis, eczema, chronic urticaria, migraine and other manifestations of allergy. There is even some evidence that there is an increasing incidence in the allergic diseases. Is such an enormous group of suffering humanity deserving of our general attention?

That there is already a rapidly increasing interest in this subject is evident from a number of sources. There are two national societies* composed of members specializing in this field and having annual and semi-annual meetings with extensive and comprehensive programs. Recently a number of local societies have sprung up. A journal** devoted entirely to papers on allegery is having a successful career. The prominence and frequency of papers and clinics on allergy in the programs of county, state, national and hospital meetings speak for an awakening of the just recognition of this field.

In the last two or three years the lay educational campaigns have diffused medical knowledge to such an extent that a goodly proportion of the public has become more critical and demanding in its medical services. Not infrequently it has happened that the doctor has had to keep pace with the growing education and demands of his patient. The physician can no longer deny them hay fever treatments when on the radio, in the newspaper and in popular lectures the sufferer learns that such treatment is available and has considerable possibilities of benefit. Many patients are no longer satisfied with injections of epinephrin for their asthma when they see and hear all around them evidence and stories of the importance of investigating the cause of their attacks.

As additional evidence of the rapidly growing interest in the subject of allergy the following is taken from an editorial in the May, 1934 issue of *Hygeia*. During 1932, 4,500 health questions were sent in to this magazine. Allergy did not appear among the first twenty-five subjects about which most frequent inquiries were made. However, in 1933, allergy ranked eighth in this same list.

Any lack of interest of the practitioner in the subject certainly cannot be due to the recency of its development. Many of the fundamentals were described a long time ago. For example, more than seventy-five years ago Blackley of England performed and described a skin test with pollen, which after seventy-five years is still not in the armamentarium of a good many members of our profession. The possibility of foods, hairs, feathers and drugs causing asthma was discussed fully in text-books almost a hundred years ago. Is it not about time that we begin to pay more serious attention to this field?

SIGNIFICANCE OF ALLERGY AND ALLERGIC DISEASES

Allergy may be briefly defined as a naturally acquired human hypersensitiveness showing a strong hereditary tendency. The pathological change occurring as a result of allergic irritation

---

Read before Section on Medicine, Illinois State Medical Society, Springfield, May 16, 1934.

*Association for the Study of Allergy and Society for the Study of Asthma and Allied Conditions.

**The Journal of Allergy.

is either a localized edema or spasm of smooth muscle or a combination of both. The portion of the body involved in this reaction determines the presenting complaint. Favorite sites of localization are the nasal mucosa, the bronchi, the skin and the gastrointestinal tract. But there is practically no organ exempt from such reactions.

The grouping of the various allergic diseases is predicated on their common factors in etiology, the similarity in methods of diagnosis and the general principles involved in treatment. With slight modifications a consideration of the cause of one allergic manifestation, such as asthma, forms the basis of the appreciation also of the etiology of similar conditions such as hay fever, eczema and urticaria. It is true that in each of the manifestations variations exist which make further study necessary. Thus, the common groups of causes of allergic disease in general are the epidermal substances (feathers, hairs), foods, pollens, drugs, miscellaneous materials and bacteria. In asthma, feathers and hairs are more important, especially in older children and in adults; in urticaria food is the dominant etiologic factor; and in hay fever pollen is the most important cause.

The principles in diagnosis in the different allergic manifestations are also similar. The performance of the scratch tests is now an almost universal procedure. In some cases intracutaneous tests are performed and in still others conjunctival, nasal, bronchial and oral tests are necessary to make an etiologic diagnosis. In still others the indirect method, passive transfer, is necessary. Here again we find that there are also some differences in what is most applicable in the various allergic manifestations.

With respect to the specific therapy, it is also true that the common principles of elimination and desensitization apply to all allergic diseases. It is gratifying now to know that with the requisite skill on the part of the physician and good cooperation on the part of the patient about half of the asthma cases may be helped, 85 per cent. of the hay fever patients can be given satisfactory relief and the other types of allergies may be benefitted in about similar proportions. It is not my purpose here to discuss the details of either etiology, diagnosis or treatment, but merely to call attention to their relationship and means of approach in study.

RÔLE OF PRACTITIONER

The history of allergy is an example of the chronology of any new and worthwhile phase or thought in medicine. First, there is always skepticism. It is fashionable to be a critic and deny everything if possible. Even Louis Pasteur, whose principles of germs as a cause of disease we now accept *in toto,* experienced years of bitter struggle with his super-critics. The second stage is overenthusiasm. This happened in the history of bacteriology, when everything from old age to cancer and hay fever, was attributed to living germs. It also happened, and is probably still happening, with respect to allergy. Inclusion of almost everything in the list of allergic conditions and the extensive and indiscriminate performance of skin tests are all too frequent, even now. It is not an uncommon experience for the writer to have patients referred to him for an allergic investigation, presenting such complaints as psoriaris, acne, arthritis, winter itch and ringworm infection. Closer study and better acquaintance with the problems will indicate that there are still a number of disease states which cannot be placed in the allergic group. Happily, the pendulum of overenthusiasm is already starting to swing back and I may predict that it will soon come to its true resting place.

The problems in allergy are not confined to the specialist in allergy. A hundred or even two hundred specialists cannot hope to cope with the personal problems of several millions of people. Every medical practitioner must acquaint himself with the principles of allergy in order to be able to handle at least the simple cases he encounters. And every practitioner, if he does not shut his eyes to facts, will meet with such cases. The rhinologist will have to do something for his patients who are troubled with hyperesthetic rhinitis or hay fever. The chest specialist frequently sees patients with asthma. The gastroenterologist has many instances of gastrointestinal allergy. The dermatologist is faced with the problems of urticaria, angioneurotic edema, eczema and contact dermatitis. The neurologist is consulted for migraine, which is frequently allergic. The urologist at times encounters bladder irritability due to food allergy.

The orthopedist may see an allergic joint. In the province of surgery the differentiation of abdominal allergy from a surgical abdomen is an ever increasing problem. The surgeon must also make decisions as to the safety of operations in asthmatic individuals. The obstetrician may have to know what may happen to the asthmatic woman during pregnancy. He must also know the facts about heredity in allergy in order to give the correct information to allergic parents. Drug allergy, which is more common than is ordinarily considered, and may at times be quite serious, should interest every physician. The pediatrician and general practitioner, the men who see all and must know a little about everything, certainly cannot afford to neglect the allergic problems in their patients.

What then should be the relationship of the general practitioner who meets problems in allergy to the specialist in allergy? It is my belief that there is room and need for both. The orthopedist has his function and place and yet the majority of fractures will and should continue to be treated by the general practitioner. It is my feeling that in the field of allergy the same situation is true. The bulk of the simpler cases should be handled by the general practitioner. There will still remain problems which require the skill and experience of the specialist.

HOW IS EXPERIENCE TO BE ACQUIRED?

It must be admitted that at the present time the proportion of allergy patients which the specialist must manage is considerably greater than in some of the other fields. It cannot be denied that in order for the average physician to assume the responsibility and care of some of the allergic individuals he will have to make more strenuous effort to obtain the information and acquire the necessary experience. Such study and training was required to prepare him to deal with fractures, diagnosis of heart lesions and the management of childbirth. There is no reason to believe that a similar degree of skill in the handling of hay fever, asthma or eczema will come without a similar effort. While it can be said that the essential training in the majority of conditions which the average practitioner may be called upon to manage was obtained in the medical school or during his service as an interne, training in allergy has usually not been obtained in this way. When most of you were students the subject of allergy was just a pretty theory or was not even mentioned in your medical lectures. Even now the majority of medical schools give no systematic training in allergy to the undergraduate student, although many of these schools have developed elaborate clinics in this field. How, then, is information and training in this subject to be obtained? As a preliminary step it is recommended that the physician-student read thoroughly one or two of the simpler text-books,[1, 2, 3] now available. The larger and more encyclopedic works would be best left for future use after a working knowledge is acquired. After a systematic study of a practical text-book further readings in periodic literature should be planned. It is important that the choice of such articles be critical and selective.

While reading is a requisite, training and study under the guidance of some one experienced in the management of allergic diseases is usually necessary for a proper preparation. Visits to the clinics connected with many of the medical schools will provide at least some of the visual experience. For more fundamental experience and sufficient training to enable the practitioner to manage his allergic patients more satisfactory postgraduate instruction from men specializing in this field are now available.

And finally, may I remind you that with a reasonable foundation of basic knowledge careful observation in the pursuit of one's own practice is one of the best and oldest means of increasing skill and experience in any field.

185 N. Wabash Avenue.

REFERENCES

1. Feinberg, S. M.: Allergy in General Practice, Philadelphia, Lea & Febiger, 1934.
2. Balyeat, R. M.: Allergic Diseases, Their Diagnosis and Treatment, Philadelphia, F. A. Davis Co., 1930.
3. Vaughan, W. T.: Allergy and Applied Immunology, St. Louis, C. V. Mosby Co., 1931.

DISCUSSIONS

DR. I. PILOT, Chicago: I think Dr. Feinberg has made some valuable suggestions to the general practitioner and also to the internist.

I believe that a large proportion of practice is really on the basis of allergy, if we accept the term in the broad sense. The term allergy infers an altered response or reactivity that is usually a response in the direction of hyperactivity or hypersensitiveness.

If one looks into the history of allergy the term originally was used in connection with infections.

The Von Pirquet test, the tuberculin test, is a allergic response to tuberculin. Since then allergy has become quite broad. It applies not only to these immediate atopic reactions that have been mentioned here with reference to hay fever and asthma, but also is now applied to what we termed idiosyncrasies in the past. Idiosyncrasies to drugs are now referred to as allergic responses, for example to cincophen, salvarsan, and quinine. All of these drugs we know, may give hypersensitive reactions.

I have always emphasized that allergy plays a tremendous role in the infectious diseases as it was originally described in the tuberculin test. We now find comparable tests that can be carried out in such infectious disease, for example as undulant fever, in tularemia, in such conditions of venereal diseases as lymphogranuloma inguinale, so-called Frei test. All of these are allergic tests that belong to the classification of the Von Pirquet reaction. Progress in allergy has been such that it must be recognized by the internist and he must make the procedures that are employed by the allergist a part of his own routine. At least a certain minimum number of tests will become the function of the general practitioner, and the internist.

The more complicated asthmatics, the more complicated cases of angioneurotic edema, etc., will have to be referred to the allergist, but the future certainly in allergy means that the practitioner must take cognizance of individuals who respond in a different way. Take for example: the rheumatic diseases. Rheumatic diseases are being recognized, although not proved, as being hypersensitive responses to certain agents or substances, particularly streptococci. If we add drug idiosyncrasies to rheumatic diseases, certain other infectious diseases, besides hay fever and asthma hrticaria, altogether they constitute a tremendous part of general practice, and the practice of the internist.

PNEUMOTHORAX TREATMENT OF LOBAR PNEUMONIA

HARRY J. ISAACS, M.D.; I. C. UDESKY, M.D., AND ANGUS DE PINTO, M.D.

Attending Physician and Residents, respectively, Cook County Hospital.

CHICAGO

The literature reports 50 cases of lobar pneumonia treated by artificial pneumothorax since 1921, with a cure of 47 and a mortality of three. The ages of these patients varied from six weeks to 62 years. In 41 of the cases, the pneumothorax treatment was given on the second to the tenth day, and in the remaining nine, the treatment was given late, which simply means that the ensuing complications of lobar pneumonia were encountered. Coghlan,[1] in 1932, reported six cases with recovery in five. He reported that a few hours after the pneumothorax therapy, a series of events occurred which were almost indistinguishable from a true crisis. This he labeled as a false crisis, for it was characterized by a drop temperature to 99 or 100, associated with profuse sweats, decrease in pulse rate and respirations, with a marked relief of cyanosis, dyspnea and pain of pleuritic origin. He noticed the particular improvement (within 3-5 hours) of the general well being of the patient, and a marked decrease in all the symptoms and findings which occur as a result of the severe toxemia. Within 24 hours he noticed a 25 per cent. drop in the white blood cells, with a corresponding rise of the blood chlorides. Lieberman and Leopold[2] produced lobar pneumonia in 36 dogs, 18 of which were treated by pneumothorax. Of the 36 dogs, 14 developed positive blood cultures; five dogs recovered without pneumothorax treatment, one of whom had a positive blood culture. Eighteen of the dogs were treated by pneumothorax on the second day, with 15 recoveries and three deaths. He reports an abrupt drop in the temperature and white blood count, with an easier and more normal respiration and appearance of well being. One of his dogs showed a change from a positive blood culture to that of a negative culture after treatment. He also states that of the 18 untreated dogs, 13 died, and five got well. Those dogs that died did so on the second and third day of the disease.

The technic of pneumothorax therapy in lobar pneumonia does not differ from that of pulmonary tuberculosis. It is comparatively simple and can be done at the bedside. However, I advise those clinicians who intend instituting this treatment to get their initial experience in cases of lung tuberculosis. The amount of air given to an adult varies between 200 and 400 cc; while that of a child, 100 to 200 cc. Coghlan reports that in his cases, he usually gave two refills, the first being anywhere from 3 to 400 cc. of air; and the second refill given 12 to 20 hours later of a lesser amount (50 to 100 cc. less). He states that the control of the pneumonia process is at first only temporary, persisting as long as air remains in the pleural cavity, and that the air is absorbed in a very few hours. If the collapse is kept up for 48 hours, the pathological process of the lung is usually brought to an end. Cogh-

From the Medical Service of the Cook County Hospital.

lan usually precedes his treatment by giving the patient ¼ grain morphine sulphate, hypodermically, one hour before. In our first series of cases, we usually instituted two fillings, but we soon learned that one treatment usually would suffice. Our aim was to keep the lung collapsed for a period of 48 hours, so that the pathological process would be brought to an end with the production of a false crisis. It was interesting to note that after the introduction of the air in the free pleural cavity, the physical findings of the consolidated lung changed, characterized by a change from the dulness, tubular breathing and rales, to that of normal resonance or slight hyperresonance, with suppression of breath sounds (due to the artificial pneumothorax. If these physical findings of air in the pleural cavity persisted for 48 hours, it was not necessary to institute more than one refill. It is advisable to give the air early, as soon as a definite diagnosis is made. An x-ray picture should be taken in all cases to prove that you are dealing with a unilateral pneumonic process, for in bilateral cases the above treatment is contra-indicated.

Report of Cases

Case 1. Patient E. V., 33 year old white male, entered the Cook County Hospital on March 11, 1934, on the third day of the disease complaining of cough, fever, severe pain in the right chest, aggravated by coughing and breathing, and chills. His temperature was 104, pulse 100, respirations 28. He looked extremely toxic, with marked dyspnea, cyanosis, dilitation of the ali nasi, and a slight respiratory grunt. His blood pressure was 122/85. His essential findings were herpes labialis, with dulness, rales, tubular breathing and increased tactile fremitus over the right base. W.B.C. 12,200. A diagnosis of lobar pneumonia was made, which was verified by x-ray examination. The next day (March 12, 1934) his temperature rose to 105, respirations 36, pulse 110, and he appeared extremely toxic. He was then given 250 cc. of air into the right pleural cavity with no untoward effects. A few hours later he began to perspire profusely with a corresponding drop in pulse and respirations. His severe right pleuritic pain seemed to have been relieved immediately. The next day (March 13, 1934) the patient appeared comparatively comfortable, his cyanosis, dyspnea and pain had disappeared, and his temperature was 101.4 rectally (4th day). The physical findings then were those of a slight hyperresonance at the right base with an occasional rale, no tubular breathing, slight suppression of breath sounds. On the 5th day of illness, his temperature was 100.2 rectal, and his physical findings were as above. His temperature on the 6th day was around 98.2 rectally, and from then on he made an uneventful recovery, going home on the 14th day.

Case 2. Patient L. P., 44 year old white male, entered the Cook County Hospital, March 15, 1934, on the second day of the disease complaining of chills, fever, cough and severe pain in the right chest. His temperature was 104, pulse 120 and respirations 38. His blood pressure was 125/85. He was extremely toxic, showing marked evidence of dyspnea and cyanosis. His essential findings were those of a right lower lobar pneumonia, which was confirmed (before pneumothorax therapy) by x-ray examination, W.B.C. 10,000. That day (March 15, 1934) 350 cc. of air was introduced into the right free pleural cavity with no untoward results. A few hours later the patient was perspiring freely. The next day (March 16, 1934) the patient felt considerably better, stating that the severe sticking pain in his right chest had disappeared entirely, and that he now could breathe with ease. His temperature was 103.6 rectal. His dyspnea and cyanosis were markedly diminished. On the fourth and fifth day his temperature was 102.5 rectal, and 101.2 rectal, respectively. He was afebrile on the sixth day and from then on made an uneventful recovery.

Case 3. A patient 35 years old, made, came in with a right lower lobe pneumonia, was given 350 cc. of air on the second day and made an uneventful recovery, with the production in a few hours of a false crisis. Unfortunately, his history was lost and the exact details cannot be mentioned.

Case 4. A 41 year old white male entered the Cook County Hospital on March 22, 1934, on the second day of his illness, complaining of chill, fever and pain in the right chest. His temperature was 105.2, pulse 122 and respirations 40. W.B.C. 12,000. He showed a right middle and lower lobe pneumonia, which was verified by x-ray examination. 450 cc of air, on the second day of admission, was introduced into the free pleural cavity with no untoward results. The next day (March 23, 1934) his condition remained unchanged, for he was still very toxic. His temperature was 103.2, and his dyspnea and cyanosis were quite marked. No additional air was introduced into the free pleural cavity, for he showed the physical findings of artificial pneumothorax, characterized by slight hyperresonance and suppression of breath sounds. He also developed a slight subcutaneous emphysema around the pneumothorax opening. However, his pleuritic pain was somewhat less pronounced. On the following day (March 24, 1934) he appeared much more toxic with definite findings of a pneumonic process on the opposite (left) side. His condition became progressively worse and he died on the sixth day of his illness, with a bilateral pneumonic process.

Case 5. A white male patient, P. T., aged 35 years, entered the Cook County Hospital, February 14, 1934, on the fourth day of illness complaining of cough, fever, chills, and pain in the left chest. His temperature was 104.8, pulse 124, respirations 28. Blood pressure 118/60, W.B.C. 13,750. He was cyanotic, flushed face, and presented the physical findings of dulness, tubular breathing, rales, pectoriloquy and increased tactile fremitus at the left base. A diagnosis of left lobar pneumonia was made. That afternoon (February 14, 1934) he was given 500 cc of air into the free

pleural cavity with no untoward results. In a few hours he felt much more comfortable, perspired profusely and stated that the severe pain in his left chest was considerably less marked. The next day (February 15, 1934), the condition of the patient was about the same. His temperature was 103.4, pulse 120 and respirations 36, and on physical examination he still showed dulness, rales and tubular breathing at the left base. At 5 P. M. of that day he was given an additional 300 cc. of air and his condition after the pneumothorax was somewhat better. The next day (February 16, 1934) his temperature was 102.4, pulse 136 and respirations 48, and he appeared very toxic. His pulse was weak and he was expectorating large amounts of blood stained sputum. The following day (February 17, 1934) his temperature was 103.2, pulse 110 and respirations 30. He was markedly cyanotic. In addition there were findings on the opposite side (right) showing dulness and rales, with extension of findings in the left lung. He expired at 4:50 P. M. of that day.

Case 6. J. P., a 39 year old white male patient, entered the Cook County Hospital on the fifth day of disease with cough, fever and pain in the right chest. His temperature was 103.6, pulse 112 and respirations 36. Blood pressure 112/68. He showed definite dulness over the lower third of the right lung posteriorly with tubular breathing, few rales and increased tactile fremitus. The left lung showed occasional inspiratory rales at the base. No x-ray was taken. A diagnosis of left lower lobar pneumonia was made. That evening at 8:30 P. M. 400 cc. of air (pneumothorax) was introduced into the right pleural cavity. The next day, (February 13, 1934) his temperature was 104, respirations 40 and he did not appear any better. He was given an additional 300 cc. of air, with no untoward effects at 9:45 A. M. At 3 P. M. he appeared acutely ill, showed marked distention of the abdomen, temperature 104.8, pulse 140, and he was in a semicomatose condition. Additional consolidative findings were then found on the left side. His condition got progressively worse and he died at 12:30 A. M. the following day (February 14, 1934).

Case 7. A. P., a 24 year old colored male, entered the Cook County Hospital on the second day of his illness, complaining of cough, fever, malaise and pain in the right chest. His temperature was 103.4, pulse 128 and respirations 32. Blood pressure 105/50. The right lower and middle lobes showed dulness, rales, tubular breathing, increased fremitus, and a pleural friction rub. In addition, there was a slight rigidity of the neck with a positive Brudzinski. The Kernig's were negative. The spinal fluid was slightly opalescent, under increased pressure, cell count 150 polymorphonuclear leucocytes, Pandy positive, and showed gram positive extracellular diplococci. A diagnosis of a right lower and middle lobar pneumonia, with a pneumococcus sepsis (meningitis) was made. The next day (February 11, 1934) his temperature was 104.4 and the physical findings in the lung were more marked. He then showed no signs of meningeal irritation. The following day (February 12, 1934) at 8 P. M. he was given 600 cc. of air into the right pleural cavity, with no change in his condition. On the 13th he appeared to be a little improved, was perspiring profusely and stated that his pain in the right chest was less marked. His temperature was 102.6. That morning he was given an additional 400 cc. of air. His condition became progressively worse and he died on February 14, 1934, at 4 A. M.

DISCUSSION

A preliminary report of seven cases of lobar pneumonia which received pneumothorax treatment brought out a few interesting and practical points; of these seven, the mortality was four. The ideal case for the above treatment presents itself in early unilateral lobar pneumonia, which is verified both by physical findings and x-ray. It is advisable to take x-rays in all cases before pneumothorax treatment is given to prove that you are dealing with a unilateral lesion. A bilateral pneumonic process, or any complication associated with pneumonia is a contraindication to its usage. In selected unilateral, uncomplicated cases, it is a very valuable therapeutic procedure, with the immediate production of a false crisis and a general improvement in the well being of the patient. Particularly is one struck with the immediate relief of severe pleuritic pain which is encountered in many cases of lobar pneumonia, and if it is only used for the relief of the pleural pain, one has found a very simple and valuable procedure. The treatments were not associated with any untoward effects, and no deaths or complications could be attributed to its usage—thus proving that pneumothorax treatment in lobar pneumonia is not associated with symptoms of shock. The question arises as to the number of treatments which should be instituted—the literature reports anywhere from two to three. From the case reports mentioned above, our best results were obtained with only one treatment. As long as there are physical findings in the chest of a superimposed artificial pneumothorax, characterized by a change of dulness to more or less normal resonance or even slight hyperresonance, with a slight suppression of breath sounds, one knows that there is a superimposed artificial pneumothorax. If this collapse persists for at least 48 hours, the required therapeutic effect will be obtained.

CONCLUSIONS

1. Pneumothorax therapy in lobar pneumonia is a very valuable adjunct and is only

indicated in early, uncomplicated unilateral lesions.

2. It can be given in cases of pleural pneumonia with immediate relief of the pleuritic pain.

3. It is absolutely contraindicated in bilateral lesions, in complications and in late cases of lobar pneumonia.

4. It in itself does not cause any untoward symptoms.

REFERENCES

1. Coghlan, J. J.; Treatment of Lobar Penumonia by Artificial Pneumothorax, Lancet, 1: 13-17, 1931.

2. L. M. Lieberman and Simon S. Leopold; Therapeutic Pneumothorax in Experimental Lobar Pneumonia in Dogs. Am. J. Med. Sciences, 187: 315-330, 1934.

310 S. Michigan Avenue.

AND WHAT HAPPENED AFTER THE EMPLOYEE'S ACCIDENT?

KURT GARVE

Member of the California Bar.

LOS ANGELES, CAL.

That the evidentiary facts of what happened after the workman's alleged accident may greatly influence decisions of commissions and reviewing courts, is best shown in the case of Hahn v. Industrial Commission et al.[1] Deceased, a steam fitter, had been employed by the Yellow Sleeve Valve Engine Works, Inc., the defendant in error, for about nineteen days prior to his calamity. In the factory pipes containing electric wires extended down a wooden post to electric switches. On the day of the misfortune decedent had placed a stepladder about five feet tall against this post. He was standing on top of the ladder, facing the post. He had a chisel in one hand and a hammer in the other. With both hands above his head he was cutting a groove into the post in which to place a wire, when suddenly he fell from the ladder. He struck the guard rail around a lathe a few feet away from the post while falling, and his body landed on the floor between post and lathe. There was a scalp wound in his head about one inch long, from which blood flowed. He was carried into the hall entrance where he died in a minute or two. It was the contention of the claimant widow that decendent had died as a result of his fall, that, while prying with the chisel, he exerted enough force to tip the ladder, that he breathed after the fall, that his heart beat, and that he bled from the wound in his head, all of which indicated that he had not died from heart failure. This was denied by the employer who advanced the theory that deceased had died from natural causes and had fallen because he was struck by death while working. Compensation was denied, and this appeal was brought to review the proceedings of the Commission. In affirming its order the Supreme Court of Illinois said:

"There is evidence tending to show that the deceased was prying with the chisel and that the prying forced the ladder from under him, but it is questionable how must weight should be given to this evidence. Other witnesses who had equal opportunity to see what happened testified that they could not say what caused him to fall. It is undisputed that when he fell he did not utter a sound and made no effort to catch himself or to break his fall. Some of the witnesses testified that he fell in a lump; that he went back straight; that he fell in a standing position; that he made a quarter turn; that he fell in a helpless condition, all crumpled up; that he appeared to be either dazed or unconscious; that he did not seem to be falling on account of a slip but seemed to be toppling over as if he did not know he was falling; that he breathed or gasped several times; that his heart beat; and that he opened his eyes. There is evidence that, when persons fall as the result of accident, they generally make an outcry and attempt to save themselves."

It is the summation of certain rules of "judicial diagnosis" of industrial accidents which this paper will deal with. And while the light of investigation is focalized upon what happened after the employee was hurt, comparisons of facts of the pre-accidental period,[2] of that of the attack of the vulnerating force with those of the post-accidental period are apt to bring out the contrast in sharper lines than would be otherwise possible.

In a typical accident case, after the vulnerating force has acted, the employee, if seriously injured, makes an outcry which attracts the curiosity of fellow workers who thus become witnesses in the ensuing litigation, even though they may not have been eyewitnesses. They see the physical evidence of the effects of the attack of the vulnerating force. The foreman is informed, first aid is given on the employer's premises. Thereafter the injured employee is turned over to a medical doctor, or if necessary, the patient is sent to a hospital in an ambulance. There the history of the case is taken, and treatment instituted. The employee either makes an uneventful recovery, becomes crippled, or

dies, as the case may be. From the daily experience and observation surrounding these different phases of the post-accidental period certain rules have been formulated which are used as standards of conduct of the employer as well as of the employee, and which indicate the probability or improbability of the happening of an industrial accident. But as human affairs are subject to deviation from the normal, it is obvious that these observations pertaining to men and circumstances are also subject to revisions and explanations. We may, therefore, say that the fact that links of the post-accidental happenings deviate from the normal or average does not necessarily indicate that no industrial accident has happened, provided that such deviation may reasonably be explained and may be found to harmonize with the theory of an industrial accident notwithstanding such deviation.

Post-Accidental Happenings Accompanying or Immediately Following Accident. As a general rule, the fact that the injured employee noticed some pain or other sign of violence to his body while engaged in his master's business, and when following immediately the attack of the alleged vulnerating force of apparently industrial character, tends to prove an industrial accident, and therefore, compensability. The reason is that the pain under such circumstances indicates a sudden event, unexpected and unforeseen. And while the testimony of the employee himself may be sufficient to establish his claim[3], spontaneous manifestations of the state of mind of the injured employee indicative of a sudden and violent assault upon his bodily integrity become so much more persuasive, when immediately communicated by him to his fellow workers or some third party of credibility. The reason is that the victim has been deprived of his power of suppressing his feelings and of making it possible to act designedly and with deliberation. Thus, where the employee was struck by a timber about eight feet long at about the upper part of the inside of his thigh and at that moment he said: "Oh" and walked away, and later on a streptococci infection developed, the commission's denial to award compensation was reversed by the higher court, although the commission found that the attending physicians had not detected any break of the skin at the place of the injury complained of.[4] And where a cooper, while assisting another employee in raising a barrel weighing about 200 pounds, stopped in his efforts, was seen to put his hand to his head, to leave the cooler, and when asked if he had any pain or headache, answered: "I have a terrible pain, never had anything like it before," whereafter his apoplectic stroke became manifest, it was also held that he had suffered a compensable injury.[5]

But to this general rule there are exceptions which seem to contradict the principle. Thus, it may happen that the employee has been hurt in more than one place and yet he may complain of pain as to only one of them. In the Martin's Case[6] the employee had died from peritonitis as a result of his injuries. In affirming an award in favor of the widow claimant the Supreme Judicial Court of Maine commented upon the features of this case as follows: "It is true that there is testimony that the deceased did not complain of any injury below the knee to his fellow workmen at the time of the accident, or later to his wife or his physicians. This may have been due to the fact that the injury to the hip was the more painful, while the injury below the knee was apparently little more than a superficial cut or an abrasion of the skin; but for that very reason it may have been the more dangerous of the two, there being no open wound at his hip." While in this case it clearly appears that the employee's consciousness of pain was diverted from the apparently more dangerous injury to the other one, this case also shows another human trait, although in a somewhat disguised form: that small wounds not necessarily call for manifestations of pain to the outside. One has only to take the experiences of cases of tetanus with their frequent lack of history of pain or knowledge of the initial wound in order to realize the truth of this observation. Certain individuals have such a mental make-up that they will complain in the most obvious manner when experiencing but slight and transient pain. But there are others who will not so do. This may be due to the fact that they are dull by nature, or that they have been brought up to disregard pain.[5] There may be other sensations which outweigh those of pain such as an intense interest in the work at hand at the time of the injury. The different fears should not be forgotten, such as losing the job, being "kidded" by fellow workers, becoming temporarily laid off when complaining of an accident, losing

working time and, therefore, wages, particularly when the employee had had much trouble in obtaining employment, dislike for medical treatments and doctors, or even a mental cult may be responsible for the workman's silence. In many cases the apparent insignificance of the initial injury misleads the employee who, hoping to cure his ailment himself as efficiently as regular medical treatment might do, is applying home remedies and treatments in order to escape "red tape" or other disagreeable things. This is particularly the case where the employee is quite familiar with the nature of the injury received, or where the injury has lost its power of making an impression upon the workman for some other reasons. The psychology of the employer, as reflected in his intercourse with and in his policies toward his workmen, that of the coemployees, and finally that of the employee himself, therefore, may furnish a clue why pain had not been expressed by him when the accident occurred. In Lampi v. Koponen et al[7] the Supreme Court of Minnesota said: "It is true that Lampi did not go to a physician at once and that he did not speak of his injury or suffering on occasions when naturally he might have mentioned them, but some are stolid in the presence of pain and say little of their ills that not much is to be made of their silence." In this case the workman, while chopping wood, was hit by a twig in his eye. The injury finally resulted in loss of the eye. He had applied home treatments first, but later had consulted an eye specialist. The indifference of the employee as to his injury is also well shown in the case of Warsaw Coal Co. v. Industrial Commission et al,[8] where the claimant, a man 65 years of age, sustained a hernia while lifting lumps of coal. He had already a rupture on the other side. Just after having received the new hernia he went back to his box, prepared a newspaper pad, placed it under and over the new rupture for protection against it, rested for a while, and then went back to his work of loading and shooting coal until nine days later he became totally disabled. Furthermore, a man may mistake his pain after an industrial accident as being due to natural causes and report himself sick rather than injured. This is somewhat suggested in Moschogianis v. Concrete Material & Mfg. Co. et al.[9] where the order of the commission denying compensation was reversed and the injury adjudged to be compensable. While proceeding with a truck loaded with sacks of cement towards his destination, unbeknown to the driver, some fifteen sacks fell onto the street car tracks. The motorman of the street car, stopped by the obstruction, continuously sounded his gong, thus hurrying up the clearing of his right-of-way. In consequence of the strenuous work of reloading the sacks the driver suffered a hernia. He did not notice the pain immediately. But as he proceeded on his route he had "cramps." Later he reported his condition to his employer, but apparently did not make any report of his accident. It is easily conceived under such circumstances how an employee may be induced by the nature of his pain, possibly identified as due to indigestion, to not report at all. Pregnant with satisfactory explanation is also the case[10] where one of six employees while engaged in moving a heavy oaken door was squeezed by its weight against the wall, the door being immediately righted and the operation proceeding thereafter. The injured man made no outcry, continued to assist in the work, but immediately thereafter laid down on a bench quite sick and helpless for the time being. It was at this time that the other employees for the first time learned of the accident. Held that the rapid development of tuberculosis thereafter arose out of the employment. Of course, not every outcry is necessarily one indicating physical pain due to an industrial accident. It may be the indication of some mental agony, as where an injury is anticipated which, however, did not materialize. An outcry of pain may furthermore be suppressed by other mental processes at the time of the accident: such as great mental excitement. In American Mut. Liability Ins. Co. et al. v. Industrial Commission[11] fellow workers testified that the deceased workman exclaimed excitedly: "I got sliver in my finger." In Oklahoma-Arkansas Telephone Co. et al. v. Fries et al.[12] the victim noticed first that she was bleeding from her mouth before she realized that she had been wounded by a gunshot. Here, the attention of the injured is drawn to concurrent events of strong mental influence and impression rather than to the pain incident to the injury itself. The instinct of self-preservation overshadows any other sensation, including that of pain, an explanation fully reconciling the lack of utterances of pain immediately after the injury was

inflicted. Where the employee is so utterly disabled that he has lost consciousness or power of speech, utterances of pain may also be missing. In McGarry et al. v. Industrial Commission et al.[13] the employee picked up a phone, when he received such a shock all over his body that it was difficult for him to release himself from the instrument. He felt a shock all over his body, but mostly on his right side. Similar are the situations of hemorrhages from the lungs, spitting blood, and so on as immediate consequences of industrial injuries.

Where the pain does not become pronounced enough immediately after the calamity to cause the workman to complain, in absence of any explanation to the contrary, one may be inclined to think that the vulnerating force could not have been sufficiently strong to cause an industrial accident as alleged by the employee. And this has been held in a number of decisions. In Rosenkranz v. Industrial Commission of Colorado et al.[14] the employee lifted some iron when something cracked in his back. He could do no lifting thereafter. About five weeks later he complained of pain in the sacroiliac joint, but the most serious symptoms developed about the time of the litigation. Held that the strain had been only a trifling matter, not enough to cause disability, and that the progress of his hypertrophic arthritis of the spine would have culminated when it did without the strain. But in an Oklahoma case[15] the contrary result was reached by the reviewing court. Here the employee noticed a strain which was but slight so that he did not give his injury another thought until he awakened during the night with pain. A comparison of these two cases would lead to the conclusion that the more closely this type of cases approaches those of immediate pain sensation, or utterances thereof, the greater the probability that they are results of industrial accidents.

There are other indications of industrial accidents to which the principles of pain may very well be applied in a like or similar manner. Thus, stopping work immediately after the infliction of the injury may fairly lead to the inference of an industrial accident.[16]. But where the relator's fall, for instance, was not immediately disabling, but he complained of the injury and showed evidences thereof and applied home remedies which he kept at his work, but four months later he was suffering from cancer, it was held that he might have suffered a compensable injury, even though he did not leave the employment, but completed his shift, and worked from day to day without much complaint, the reviewing court remarked that "it is not unusual to find workmen doing as relator did".[17]

Reporting to medical doctor immediately after the calamity is also a sign pointing to an industrial accident in absence of any showing to the contrary.[18] So favorable may be the inference that it may even outweigh admissions made by the employee against his own interest. In Oklahoma Gas & Electric Co. et al. v. Slocum[19] the workman stated to his treating physician that he did not get hurt, but that the pain began in the night. And yet compensation was awarded for aggravation of his pre-existing arthritis. But, where the employee claimed to have twisted his ankle while carrying heavy material, it was held that his disability did not result from his employment.[20] None of his fellow workers had heard any complaint that he was hurt. He worked until quitting time and told one or two employees that he was sick. He went to a hospital where he told one of the nurses that he was suffering from rheumatism, and was listed there on his own suggestion as a pay patient. There was further evidence that he had made no claim for compensation until about a month after the accident, in the meantime having written to the superintendent that he was sick, but not mentioning anything about his accident. Finally, the doctor testified that he had treated claimant for sciatica. Similar is the case of Gaidos v. Industrial Accident Commission of California et al.[21] where the evidence showed that claimant never attributed his condition to any accident. His ailment was diagnosed and treated by the doctor as lumbago until informed some weeks later of the alleged industrial accident.

Sometimes findings on autopsy,[22] of x-ray pictures,[23] or the very nature of the disease make the claimant's contention of an industrial accident highly improbable. Thus, in a Pennsylvania case[24] an excessive inhalation on a single occasion of smoke was held not to have caused asthma, while in a Minnesota case[25] judgment in favor of claimant was reversed by finding that Hodgkin's disease could not have been caused by hydrochloric acid fumes. In Knight's Case[26] the

post-mortem disclosed an aortic aneurysm. The claim that some exertion some three months ago, after which time decedent had worked regularly until his death, had caused his death, was held to be unfounded. But in Gilliland v. Ash Grove Lime & Portland Cement Co.[27] the court of review commented upon the profuseness of pulmonary hemorrhage from which the employee died before medical aid could reach him, reversing the decision of the lower court and holding that the facts indicated an accidental injury arising out of the employment.

Reporting the accident to the employer, the "company doctor," the first aid nurse, or any other duly authorized agent of the employer is another point apt to throw some light upon the question of compensability of the workman's disability. In Halper v. The Golden Rule et al.[28] it was found that the employer had been informed of the employee's injury within the statutory period, where the employee had reported about 6 days after the accident to the company's nurse that her leg was paining, which about three months later showed a sarcomatous growth. In other cases the lack of reporting has been held not to be fatal to recovery because not having been due to any fault of the employee. In New Jersey Fidelity & Plate Glass Ins. Co. et al. v. Richey[29] the Supreme Court found that the accident occurred on a Friday, that the employee continued to work on that day and the Saturday following, and that on the next Sunday the employee had called in a physician who had diagnosed the trouble as a strangulated hernia, which necessitated immediate hospitalization and operation from which the employee died. On the other hand, reports of accidents made out by the employer, or his duly authorized agent, sent to the insurance carrier which forwards them to the Industrial Commission, are to be considered evidence, even though containing admissions against the interest of the master.[30] But their weight of evidence is for the commission. Such report may therefore be contradicted by the employer.[31] The same holds true as to the mere fact that an employer has furnished medical care to an injured employee.[32] This does not constitute a waiver of the employer's right to subsequently show that the injury did not arise out of the employment. Mistake of fact, gratitude towards an old and faithful servant, or other considerations may explain why medical treatments had been given to him notwithstanding the employer's resisting claims for compensation.

The Aggravation of a Pre-existing Disease. The post-accidental course of a pre-existing infirmity of the employee has certain peculiarities of its own which are helpful in establishing probability of industrial accident. Thus, where a disease, existing in time prior to the alleged accident, terminates in disability at an earlier date than reasonably to be expected according to the nature and extent of the disease when compared with the usual and natural course of like or similar pathologies, the presumption arises that the pre-existing infirmity has been influenced by the accident.[33] Sudden rapid progress of a disease which prior to and up to the time of the alleged accident progressed slowly is also suggestive of a charge to industry in absence of any explanation of intrinsic conditions such as acute exacerbations coming from within.[34] Where the disorder had been arrested prior to the time of the accident, an acute flare-up, otherwise unexplained, is likewise pregnant of suspicion of industry as causative factor.[35] Where the seat of post-accidental manifestation of disorder corresponds to that of the injury, an aggravation of the pre-existing infirmity, even though nonmanifest, may fairly be contributed to industry, too.[36] And retardation of progress of injury to the former state of health after the accident, or absence of return thereto, are facts much compatible with the theory of industrial accidental happening and compensability.[37] A few instances will be given. In Pace v. North Dakota Workmen's Compensation Bureau[38] an apoplexy was held to be compensable, as the rupture of the blood vessel with the resulting apoplexy had taken place earlier because of excessive heat under which the employee had been working. In Georgia Casualty Co. v. Industrial Accident Commission et al.[39] death of the employee had been due to an anaesthetic given to him after an industrial accident. The employee had died from status lymphaticus. Held compensable. But where a moulder sustained a burn upon his foot and thereafter developed signs of myxedema, compensation for the aggravation of the myxedematous condition was denied.[40]

Special Post-Accidental Problems: (a) The "Fall" Cases. Assuming that an employee has fallen, and that the fall is claimed to have been

the proximate cause of his disability, are there any criteria which with a reasonable amount of probability indicate whether the fall naturally and probably caused the disability, or the latter preceded the former? So much is certain that a person may be presumed to have been fully conscious, if, when in distress, he made some voluntary effort to save himself, to break the force of the fall, or at least made an outcry of distress or pain, if nothing else. And consciousness before the fall may justify the inference that the employee was not the victim of the culmination of a pre-existing infirmity. The same holds true, when such acts occur during the fall itself. To a certain extent the reverse of this rule may also be applied. It is the fact of consciousness or unconsciousness in such cases as apoplexies, aortic aneurysms, heart strokes, epilepsy and so on, as evidenced by the victim's conduct during the fall itself which controls the decisions of compensability and non-compensability to a great extent. Compensation was awarded upon this principle in the case of a watchman,[41] 64 years of age, suffering from high blood pressure, who, when riding on a bicycle and losing his balance, attempted to save himself by grasping a board before he fell, the bicycle passing from under him. Or where a janitor suffered a stroke in an effort to avoid being crushed by a one hundred pound barrel which he had been rolling out of a cellar, but which had slipped back onto him, his subsequently appearing apoplexy was held to have arisen out of the employment.[42] (b) The "Apoplexy" Cases. In the apoplexy cases the interval of time between the apoplectic stroke and its appearance is important. In Samoskie v. Philadelphia & Reading Coal and Iron Co.[43] deceased complained of pain in his head after an interval of time since the attack of the industrial vulnerating force, variously estimated from 4 to 15 minutes. He then fell forward in a semi-conscious condition. In spite of the fact that the employee had suffered from arterio-sclerosis, compensation was awarded, but only after the insurance carrier had made four futile attempts to resist the claim. (c) The "Angina Pectoris" Cases. Quite different is the judicial attitude as to those heart cases in which the employee concededly could have died from natural causes at any time. Where death results immediately after the alleged industrial vulnerative attack, compensation will generally be awarded. But where only symptoms of the disease arise, and where even a short interval of time elapses between the accidental happening and the manifestation of disability, compensation is likely to be denied. Thus, where the employee had finished his job of loading a wagon with bags of coal about 100 pounds in weight, and he thereafter walked about 200 feet without any complaint of sickness or of injury, sat down striking a match to light his pipe, and while so doing collapsed, dying shortly thereafter, compensation was denied.[44] And where the employee was engaged prior to his calamity in work about the stage and in helping moving a heavy movietone machine, the same conclusion was arrived at, as after having finished his work the employee had walked about, talked to his manager and his wife, and apparently suffered no ill-effects from his work, when about half an hour thereafter he suddenly died from an acute heart attack due to coronary sclerosis.[45] (d.) The "Hernia" Cases. The hernia cases also show some peculiarities. There are certain jurisdictions in which pain and appearance of the hernial development are so important as evidentiary facts that recovery depends upon proof of these facts. The appearance of the hernia must be accompanied by pain.[46] And courts have sometimes even laid down standards of intensity of pain. In Young v. Louisiana Highway Commission[47] the reviewing court remarked that the testimony did not impress one as disclosing that the hernia from which the employee was suffering was caused by his alleged accidental injury or that "there was severe pain in the hernial region," "that there was such prostration that plaintiff was compelled to cease work immediately," or "that there was such physical distress that the attendance of a physician was required within 48 hours —some of the attendant conditions necessary to entitle him under the statute to compensation."

The article thus gives a cross-section of what commissions and courts lay stress upon, particularly when the case is doubtful. When there is a clear preponderance of evidence in favor of the workman, many evidentiary facts may be waived, or, if ambiguous, may be interpreted in his favor. But where the scales are in balance as evenly as in our opening case, little items become matters of great judicial diagnostic value. This Hahn v. Industrial Commission et al.[48]

case is a good instance. Here, the deceased had had, according to one medical expert, an aggravated rupture at the side of an old appendix operation, he also had absorbed considerable pus which would tend to cause a heart lesion. Some other doctor diagnosed his ailment as an acute dilatation of his heart. An autopsy showed that decedent had suffered from an enlarged thymus gland which would predispose to sudden death with or without any industrial cause as contributing factor. All in all there were advanced so many different medical theories, of a somewhat speculative character, that the reviewing court declared that the employer's liability could not be based "on a choice between two views equally compatible with the evidence," but that "the liability must be based upon facts established by evidence," and that "where the cause of injury or death is equally consistent with an accident and with no accident, compensation will be denied."

REFERENCES

1. 337 Ill. 62, 168 N. E. 652 (1929) Rehearing denied;
2. see article "Apparently in Good Health Prior to the Accident" by Kurt Garve in "Medical Annals of the District of Columbia, September, 1933;
3. North Elk Oil Co. et al. v. Industrial Acc. Commission of California et al.
51 Cal. App. 582, 254 Pac. 582 (1927);
4. Henderson v. Industrial Commission et al.—Utah— 15 Pac. (2) 302 (1932); Remanded for further proceedings.
5. Fowler v. Risedorph Bottling Co.
175 App. Div. 224, 161 N. Y. S. 535 (1916);
6. 125 Me. 49, 130 Atl. 857 (1925);
7. 178 Minn. 133, 226 N. W. 475 (1929); compensation granted;
8. 307 Ill. 66, 138 N. E. 172 (1923); held compensable;
9. 179 Minn. 177, 228 N. W. 607 (1930);
10. Fraze v. McClelland et al. 200 Iowa 944, 205 N. W. 737 (1925);
11. 342 Ill. 605, 174 N. E. 905 (1931);
12. 128 Okla. 295, 262 Pac. 1062 (1928);
13. 290 Ill. 577, 125 N. E. 318 (1919);
14. 83 Colo. 123, 262 Pac. 1014 (1927);
15. Oklahoma Gas & Electric Co. et al. v. Slocum et al. 159 Okla. 245, 15 Pac. (2) 29 (1932), rehearing denied;
16. Industrial Commission of Ohio v. Dunham 83 Ohio App. 237, 169 N. E. 36 (1928);
17. Hertz v. Watab Paper Co. et al. 180 Minn. 177, 230 N. W. 481 (1930); Remanded for new trial.
18. New Castle Foundry Co. v. Lysher 68 Ind. App. 509, 120 N. E. 713 (1918);
19. 159 Okla. 245, 15 Pac. (2) 29 (1932), rehearing denied;
20. Johnson v. T. B. Steward Const. Co. et al. 37 Ariz. 250, 293 Pac. 20 (1930);
21. 71 Cal. App. 749, 236 Pac. 160 (1925);
22. William Simpson Const. Co. et al. v. Industrial Accident Commission of California et al. 74 Cal. App. 239, 240 Pac. 58 (1925), rehearing denied;
23. Easthope v. Industrial Commission of Utah et al.—Utah —15 Pac. (2) 301 (1932);
24. Mauchline v. State Insurance Fund et al. 279 Pa. 524, 124 Atl. 169 (1924);
25. State ex. rel. Johnson Hardware Co. et al. v. District Court of Carver County et al. 145 Minn. 44, 177 N. W. 644 (1920);
26. 231 Mass. 142, 120 N. E. 395 (1918);
27. 104 Kan. 771, 180 Pac. 793 (1919);
28. 180 Minn. 477, 231 N. W. 195 (1930);
29. 85 Colo. 376, 275 Pac. 937 (1929);
30. New Jersey Fidelity & Plate Glass Ins. Co. et al. v. Patterson et al. 86 Colo. 580, 284 Pac. 334 (1929), rehearing denied;
31. First National Bank of Milwaukee v. Industrial Commission of Wisconsin et al. 161 Wis. 526, 154 N. W. 847 (1915);
32. Nagy v. Solvay Process Co. 201 Mich. 158, 166 N. W. 1033 (1918);
33. Monk v. Charcoal Iron Co. of America 246 Mich. 193, 224 N. W. 354 (1929);
34. Natalini v. Riefler & Sons, Inc. 286 Pa. 301, 133 A. 547 (1926);
35. Heileman Brewing Co. v. Schultz 161 Wis. 46, 152 N. W. 446 (1915);
36. F. H. Gilcrest Lumber Co. v. Rengler 109 Neb. 246, 190 N. W. 578 (1922);
37. Hamilton v. Pennsylvania Ry. Co. 298 Pa. 22, 147 Atl. 837 (1929);
38. 51 N. D. 815, 201 N. W. 348 (1926);
39. 87 Cal. App. 333, 262 Pac. 394 (1927);
40. Johnson's Case 278 Mass. 365, 179 N. E. 923 (1932);
41. Carvey v. W. D. Young Co. 218 Mich. 342, 188 N. W. 392 (1922);
42. Benjamin v. Kurnick 5 N. J. Misc. 1095, 139 Atl. 440 (1927);
43. 280 Pa. 203, 124 Atl. 471 (1924);
44. Philadelphia & Reading Iron & Coal Co. v. Industrial Commission et al. 334 Ill. 58, 165 N. E. 161 (1929);
45. Lyons v. Fox New England Theatres, Inc. 112 Conn. 691, 153 Atl. 778 (1931);
46. see cases of Montana, Colorado, Utah, Lousiana, and so on;
47. 11 La. App. 388, 121 So. 627 (1929);
48. see 1.)

2008 West Seventh Street.

SURGICAL COMPLICATIONS OF PEPTIC ULCER

RALPH C. SULLIVAN, M.D.

CHICAGO

Peptic ulcer is apparently on the increase. Some estimate that ten to twelve per cent. of our population suffer from it. This increase may be only apparent. Thanks to the yeomanry work done by Moynihan, the Mayos, Sippy, Deaver and many others, the medical profession has become ulcer conscious. As a result, more dyspepsias are being worked up and more ulcers are being uncovered.

The complications of ulcer were known long before we had our present precise knowledge of the lesion itself. All during the 19th century, fatal cases of general peritonitis due to ruptured ulcer were being reported. Some of these were operated on unfortunately, however, too late. Today, thanks to advancement in diagnostic science, we diagnose and operate early. As a consequence, the mortality is steadily and correspondingly decreasing. To exemplify: 43 per cent, of the cases reported between 1903 and 1918 died;

of the cases reported between 1926 and 1932, only 22 per cent. died.

Coming now to the specific consideration of the complications, I don't need to tell you that the serious complications are perforation, stenosis, carcinomatous degeneration and hemorrhage.

Perforation.—Perforation occurs most often in men of the third and fourth decade. It is more frequent in the spring and fall, thus corresponding to the seasonal exacerbations so commonly seen in the chronic ulcer cases. Acute ulcers rarely perforate. Multiple ulcers and repeated perforations in the same individual occur. Rarely do bleeding ulcers perforate and vice versa.

The exciting cause of the actual perforation is difficult to fix. Perforation is usually thought to occur within two hours of a heavy meal or after exertion. Meyer and Brams, however, report a large number of cases in which the perforation occurred later than two hours, in fact 5 occurred during sleep.

A brief discussion of the pathological changes may be of interest. On the operating table the lesion is as often seen in the stomach as in the duodenum. It is usually near the pylorus on the lesser curvature of the stomach or on the anterior or antero-superior wall of the duodenum. The size varies from a pin point opening to one that would easily admit the finger. Surrounding the ulcer is usually dense, friable scar tissue. An associated gastritis is common. Masses of fibrin are often present and these sometimes bind the stomach to the liver, gall bladder, intestinal loops, omentum, or anterior abdominal wall. In some cases these adhesions are firm enough to close the perforation—at least temporarily. In most cases, however, the stomach contents leak into the general peritoneal cavity. In the latter eventuality, general peritonitis results. In the former cases, where the perforation is plugged with omentum, fibrin, or adhesion to some other abdominal organ, there are several possibilities.

As first of these possibilities, the perforation may close permanently. The small amount of extravasated stomach content is absorbed and the patient recovers. This is the closed perforation of Schnitzler, formes frustes of Vaughan and Singer, and explains the few medical recoveries.

As another possibility, the closure is only temporary. The patient recovers from the original attack only to suffer one or more severe attacks of pain due to leaking. In still other cases the extravasated stomach contents are walled off and a perigastric, subphrenic or subhepatic abscess formed which may, or may not communicate with the interior of the stomach.

The symptoms of perforation are, as a rule, quite characteristic. Often the history of preceding gastric distress or even of medical treatment or ulcer can be elicited. Often or a day or so preceding the catastrophe the ulcer pain has been more constant and may be of a different type.

The onset is usually abrupt, with severe pain in the epigastrium. The victim often lies immobile on his side with his knees flexed and his head bent down. His face is usually pale, beaded with perspiration. He has a look of mortal anguish. The abdomen is rigid. His pulse is raised and the temperature subnormal. Fluoroscopy may show a gas bubble under the diaphragm. However, it must be remembered that if the bubble is not found, perforation cannot be excluded. Fluid in the flanks and obliteration of the liver dullness are often late signs and consequently of little value in the early diagnosis.

Very few abdominal conditions present such a picture. In acute cholecystitis the patient is usually very restless. He tosses about the bed; he may even try to "walk the pain off" by pacing up and down the room.

Acute pancreatitis usually occurs in fat, middle-aged men who may give a history of gall bladder disease and who are usually steady users of alcohol. The pain is even more severe and is not rarely referred to the umbilicus. The patient may be slightly cyanotic. The shock is extreme. I often think we would diagnose acute pancreatitis more frequently if we just happened to think of the condition.

In pneumonia the initial chill, the rapid respiration out of proportion to the pulse, the high temperature, the bloody expectoration are the differential signs.

From what has been said it is evident that casual examination may be sufficient to establish the diagnosis in a typical early case. However, we are not always blessed with a typical early case. In the late cases, diagnosis is sometimes very difficult. For example: some years ago I saw a young man who had been admitted to the ward with abdominal pain referred to his whole

right side of abdomen. This had been present fifty-six hours. He had vomited once soon after the inception of the pain. On examination the right side of abdomen was tender and rigid. Naturally we thought immediately of appendicitis. On further questioning, a history of indefinite gastric trouble was elicited. This caused us to entertain a suspicion of a ruptured ulcer. A gas bubble was demonstrated by fluoroscopy. At operation a closed perforation was found. Today we do not operate on these cases unless the symptom return. Treatment of perforation is immediate surgery. The urgent need for surgery is evidenced by the following figures: The mortality for cases operated on within the first twelve hours is 15 per cent., for cases operated on between the twelfth and the twenty-fourth hour, 30 per cent., for cases operated on after twenty-four hours, 70 per cent.

In all fairness, however, it must be admitted that the time element is not the only factor influencing mortality. Death is due to peritonitis which, in turn, is proportionate to the amount of peritoneal soiling that occurs before operation. Thus, a large opening in a full stomach may flood the peritoneal cavity with stomach contents in a very short time. A pin point opening in an empty stomach, on the other hand, may be accompanied by very slight peritoneal contamination. Again, in other cases, as said before, the perforation may be closed. This closure probably explains the few cases that recover without an operation and the successful operations in certain late cases.

As regards technic: The operation that seems best to me is simple closure of the perforation usually without drainage of the abdomen. With this procedure, further contamination of the peritoneum is prevented. If further operative procedures are needed, they can be done later in a better field for work and in a patient in much better surgical condition.

It is true that statistics from Germany seem to prove that resection carries less mortality. It must be remembered, however, that in Central Europe the high mortality of simple suture is probably due to the fact that it is reserved for the more extreme cases.

Of course, each case should be individualized. If the condition of the patient is exceptionally good and indications are present for further operative work, such as gastro-enterostomy or resection, this work may be done. In penetrating ulcers, resection is certainly indicated if it is feasible. It must be remembered that if any damage is done the pancreas, drainage to the outside is imperative. This can readily be done by removing all but the base of the ulcer according to the method of Finstrer.

Stenosis.—Coming next to the second complication—stenosis. Cicatricial stenosis usually occurs after many years of ulceration. The cardinal symptoms are almost constant gastric distress, loss of weight, vomiting of large amounts of fluid or even of food eaten the day before, and, sometimes, visible perstalsis; symptoms of tetany are rarely present.

X-ray usually shows a large, dilated stomach, or an hour-glass stomach. Oftentimes the stenosis is not complete but is made so by pyloric spasm. Loss of weight may be extreme but is usually gradual, due to the fact that some food usually is forced into the intestines. In fact, in older individuals the loss of weight may be so gradual that the patient is nearly in extremis before seeking medical aid. Younger people are usually not so tolerant.

Carcinomatous Degeneration.—As the third complication we will consider briefly carcinomatous degeneration of ulcer. This occurs, according to common estimates, in 3 to 5 per cent. of ulcer cases.

Usually gastric carcinoma occurs as a primary condition. It may simulate ulcer for a considerable period. When cancer is secondary to gastric ulcer, it usually is situated at the pylorus and the symptoms are, in essence, those of pyloric stenosis. The differential diagnosis between malignant and benign stenosis is often difficult, even on the operating table. Usually the diagnosis of carcinoma is made by demonstrating a large filling defect in the x-ray pictures. The presence of anacidity is also a helpful factor in the diagnosis.

The treatment of cicatricial stenosis is surgery but not immediately. Usually a few days' rest, but not absolutely in bed, will render the subsequent gastroenterestomy, or pyloroplasty a much safer procedure. In this preoperative treatment, dextrose is usually given by mouth, say 200 c.c. of a 10 per cent. solution every four hours, by rectum and, if necessary, subcutaneously and even intravenously. The stomach is lavaged at least once daily. If anemia is marked, blood

transfusion is certainly worth while. This preliminary treatment causes the spastic obstruction to disappear and relieves the stomach of the large quantities of putrid and fermented material previously present in it. At the same time it prepares the patient for the post-operative use of the stomach tube.

In my opinion, posterior gastroenterostomy is the operation par excellence in cicatricial stenosis. If the individual is moderately careful in his diet after the operation, the procedure usually results in a permanent cure. In carcinomatous degeneration of ulcer, the alternative between resection and palliative measures depends, of course, on the pathology present.

Hemorrhage.—Gastric hemorrhage, the last complication to be considered, is never a surgical emergency. In the first place, we must remember that gastric hemorrhage can occur not only from a peptic ulcer but also in many other conditions, including cirrhosis of the liver and purpura hemorrhagica.

Hemorrhage, in a man over forty-five years of age may be, and often is, a very serious proposition. It may even be fatal if the hemorrhage is continuous or repeated. The seriousness of hemorrhage is usually proportionate to the size of the vessel eroded. Continuous seepage, however, which is only detectable by chemical tests of the stool may lead to severe secondary anemia. It is true that very few young individuals die from the first hemorrhage and it is certainly true that a major operation in a bleeding debilitated patient is apt to be followed by a fatality. We must bear in mind, too, that in actual operation, even after prolonged search, we are occasionally unable to ligate the bleeding point.

The best treatment during active hemorrhage is rest in bed, ice bag to abdomen, nothing by mouth, plenty of M.S. and fluids subcutaneously and rectally. Personally, I believe in the administration of glucose in soda by rectum. As to blood transfusion, there is a logical difference of opinion as to its use during the acute stages. After the acute bleeding is stopped, there is no question of its value.

It is my opinion that the first hemorrhage, other things being equal, is no indication for operation. After a second hemorrhage, however, and when the hemorrhage is stopped, operation with resection of the ulcer, if possible, is indicated.

In conclusion, it must be remembered that peptic ulcer always holds dangerous potentalities. Wherever there is ulcer there is possibility of catastrophe. There is some controversy as to whether the treatment of an uncomplicated ulcer is surgical or medical. There can be no controversy as to the treatment of ulcer with complications. It is, and must be surgical. This does not mean, of course, that the physician has no part in the surgical program. He has a part and an important one. In the first place, it is to his diagnostic skill and continuous supervision that we owe the diagnosis. In the second place, it is through his co-operation before and after the operation that we can hope for the best results.

27 North Latrobe Avenue.

THE RESULTS OF GLANDULAR THERAPY IN MONGOLIAN IDIOTS

IVAN N. RADEFF, M.D.

DIXON, ILLINOIS

At the Dixon State Hospital during 1932, with the permission of Dr. W. G. Murray, I began to study the effects of glandular therapy in Mongolian idiots. I selected one male mongol, age four years, and one female, age five years, and gradually added cases as they entered the institution, up to nine cases. Of this number seven were males and two females. One of the males was colored. The patients were between the ages of one and eight years. Two have died since beginning treatment, from gastroenteritis and pneumonia, respectively. The youngest patients in the group died. The two patients first selected for study have been on treatment for more than eighteen months.

Timme's treatment was employed. The patients were given thyroid powder, one-tenth of a grain, gradually increased to one-quarter grain; potassium iodide saturated solution, two drops daily; anterior lobe of pituitary, one grain twice daily, gradually increased to two grains three times daily; whole pituitary gland, one-tenth of a grain, two times daily, gradually increased to one-quarter grain three times daily. In one week, in addition to this treatment, was added antuitrin, one-half ampoule intramuscularly twice a week, gradually increased to one ampoule three times a week.

Later on Timme's treatment was modified as follows: Anterior lobe of pituitary, three grains

three times a day; whole pituitary, one-half grain three times a day; thyroid, one-half grain once a day, and antuitrin, one ampoule once a day.

A week after the treatment was started each patient showed increased activity and a tendency to talk. Their language was not improved in the beginning as far as clearness of words was concerned, but there was a constant attempt to speak. These findings were present in all the cases consecutively.

The following symptoms were more pronounced in some patients and less in others: Polydipsia, polyphagia, polyuria, but no sugar was found in the urine.

As a result of treatment the patients gained in weight and height. The tongue did not protrude between the lips and in some cases was entirely withdrawn. The fissures of the tongue disappeared. The skin became smooth, thinner and more transparent. In some the hair fell and the new hair grew much finer and shiny. The hypertonia musculorum was not so pronounced. The eyelashes grew very long. The chronic conditions of the eyes, conjunctivitis and blepharitis, disappeared and did not recur. In some cases there was improvement of mental capacity.

One most interesting case is worthy of mention:

J. G., three years and three months of age, was admitted to the Dixon State Hospital on November 2, 1931. On admission his mental age was seven months and the intelligence quotient 17, which placed him in the idiot group. He was put on treatment on August 12, 1932, almost ten months after admission and during which time he had shown no improvement. After treatment his mental age increased to nineteen months and the intelligence quotient to 37, more than double that on entrance. He grew thirteen inches taller. In the first few months he gained about ten pounds in weight, but later on lost some of this gain. His tongue did not protrude between his lips and the fissures of the tongue disappeared. The testicles descended. His eyelashes became longer and his hair changed to a more soft and shiny type. He could say short sentences clearly. He developed severe temper tantrums. Since August, 1933, in spite of treatment, his intelligence quotion has gradually dropped until now it is .30.

The female mongol, who has been on treatment for the same length of time, showed some improvement of speech, but her mental age gradually dropped from an intelligence quotient of 34 when treatment was started to 24 at the present time.

The rest of the mongols showed very slight improvement of the intelligence quotient. However, some of them have not been on treatment long enough to produce much change.

The glandular product that we used was as fresh as could be obtained from the regular market and was secured from well known pharmaceutical houses.

The two patients mentioned above received the same drugs in the same amounts, and yet they showed a reverse progress to each other in mental development.

Conclusion: The above type of treatment is of no significant value to these patients. The slight improvement they showed does not make their life more pleasant or more comfortable. They still will remain as institutional cases.

Dixon State Hospital.

INFANT NUTRITION: SOME PRINCIPLES FOR INFANTS AND ADULTS

JESSE R. GERSTLEY, M.D.

CHICAGO

This is a summary of ten years' investigation. I first became interested in a study of the acidity of infants' stools by trying to determine whether lactose added to cow's milk would produce diarrhea. The plan of experiment was to determine the amount of acid execreted in the feces. This may sound a bit theoretical, but in reality the whole theory is very simple. There are countless millions of bacteria normally present in the intestine. These bacteria will ferment any unabsorbed sugar into acids. According to all the older theories, the acids resulting from such fermentation irritate the intestine and produce diarrhea. Hence a determination of the amount of acid and the degree of acidity of the stool would give some indication of the fate of carbohydrate in the intestine. The results during these past years have been so contradictory to the prevailing theories that they have practically revolutionized some of my principles of infant feeding.

Our procedure was first to establish a control by determining conditions in the normal breast fed infant. Here the stool is soft and relatively small, averaging twenty to forty grams. It contains a moderate amount of acid, both free and in various combinations. But the outstanding feature is the high *degree* of acidity as shown by the hydrogen ion concentration. In short then, the stool of the breast fed is small and highly acid.

The stool of the baby receiving whole cow's

Read at the Jackson Park Branch of the Chicago Medical Society, March 15, 1934.

milk is generally constipated, formed, heavier, contains less free acid on titration and above all, the degree or intensity of such acidity is much less than in the breast fed. It may even be alkaline.

While the normal artificially fed infant presented results which were generally constant, those with diarrhea offered bewildering difficulties. No matter whether the feeding had been plain cow's milk, or cow's milk with lactose even up to twelve per cent. the amount of acid excreted showed no constancy whatsoever and was utterly unrelated to the amount of lactose in the mixture. Frequently babies on simple cow's milk excreted far more acid than did those with a twelve per cent. lactose addition. Again at times an infant would have watery stools and high acid excretion and then with absolutely no change in the diet the diarrhea and acids would disappear. Sometimes the addition of lactose would be followed by a slight increase in total acid excretion and then a further increase in the sugar resulted in a diminution. In all cases with increased acid excretion the acid existed not so much in a free as in a combined state. In other words, it had been neutralized in the intestine.

Clinically, parenteral infections were by far the most common cause of the diarrheas. Certainly the symptoms were unrelated to the amount of lactose in the diet. *If* dietetic factors were involved, I am beginning to think we should go back forty years and reinvestigate the protein.

The mechanism involved in these parenteral diarrheas is a matter of further study. The daily total weight of the stool is greatly increased. Hence the total acid excretion is somewhat increased. But this acid has been so neutralized in the intestine that the actual acidity of the stool is relatively low. Gram for gram it contains much less acid than does the stool of the breast fed. In all these years we never found a diarrheal stool of the artificially fed with anywhere near the degree of acidity of that of the normal breast fed infant. One thing is certain. Whatever the mechanism involved, the theory of an excessive lactose fermentation *per se* as a cause of severe diarrhea and nutritional disturbance must be given up.

After several years of such bewildering results we gradually began to see the possibility of some order. When lactose had been increased gradually to twelve per cent. in the bottle of a normal infant on whole cow's milk, the following reaction often took place. After about two weeks or more the stools would assume some of the characteristics of the breast fed. They became softer, typically yellow, more acid in hydrogen ion concentration and often smaller. This was absolutely without explanation until it occurred to us that by adding twelve per cent. lactose to whole cow's milk we had a mixture containing sixteen per cent. lactose and four per cent. protein. This gave a ratio of lactose to protein approximating that in breast milk. It is possible that such a relationship may be one of the essentials in determining some of the characteristics of the infant's stool. In passing, one cannot help being astonished at the powerful alkalinizing effects of cow's milk protein, if it takes sixteen per cent. lactose to produce enough acid by its fermentation to overcome the alkalinizing, effects of only four per cent. cow's milk protein.

If this ratio is important one would expect to find changes in the intestinal flora. This is just what happened in most of our experimental work. After the babies had been on this mixture for a minimum of two weeks very frequently the gram-negative colon bacillus flora typical of cow's milk feeding changed to the gram-positive bifidus acidophilus flora of the breast fed.

Further work showed that some babies are exceptions to this rule, and require even more lactose than this basic four to one ratio. Four to one seems a minimum. The rule also is inconstant with milk dilutions. Why this is I do not know. Possibly some babies require more carbohydrate than others and absorb more from the intestine, leaving less residue. At any rate, enough lactose must be given to leave a certain excess in the alimentary tract.

In these studies the effect of lactose seemed specific. We repeated the work with another carbohydrate but found that it had no effect upon the acids excreted. In fact, it left the stools more alkaline than did plain cow's milk. It likewise had no influence upon the intestinal flora and even in additions up to twelve per cent. still left the stools with the colon bacillus predominating.

Summarizing the work of the ten years we have tentatively constructed the following picture: The bifidus-acidophilus organisms flourish in degrees of acidity which inhibit the growth of the colon bacillus, and other gram-negative or-

ganisms. On simple cow's milk feedings the intestinal acidity is low enough to permit an overgrowth of colon bacilli. Small amounts of lactose added to the bottle are all absorbed. In larger quantity the *unabsorbed* fraction ferments into certain acids but these acids are neutralized either by the cow's milk itself or some factor in the intestine. There is still insufficient acidity to inhibit the colon bacilli. But now if the lactose is further increased to pass the critical point, enough acid will be produced by fermentation to overcome all alkalinizing influences and to be of such intensity as to inhibit the growth of the gram-negative flora and leave the gram-positive organisms flourishing. The stool now assumes the characteristics of the breast fed.

In view of the popularity of acid milks we repeated some of the work using a mixture containing ninety drops of lactic acid to a quart of cow's milk. While the addition of acid to cow's milk may make the combination easier of gastric digestion, it had no effect upon the acids in the stool. The amount of acid excreted was no greater than on the whole cow's milk feeding. The intestinal flora remained unchanged. It took a minimum of twelve per cent. lactose added to this mixture to produce the changes identical to those found when twelve per cent. lactose was added to whole cow's milk. Only then did the stool acidity shift to resemble that of the breast fed and the gram-positive flora develop. In other words, the addition of acid to milk seems to have no effect upon intestinal digestion and whatever lactic acid is found in the stool does not result from the lactic acid added to the milk, but from the intestinal fermentation of the added lactose. As in the original studies, the addition of another type of carbohydrate had no such effect.

There is a new type of lactose on the market called Beta-lactose. I have tried it in a few experiments. As far as we have gone, it seems to produce the same effects as the ordinary form. It should be of interest to the practitioner these days because, I believe, it is somewhat cheaper.

Our studies should be of significance both to the internist and the pediatrician. The internist should be interested in realizing that the factor determining the presence of a fermentative flora in the intestine is not the feeding of acidophilus organisms or the addition of an indefinite amount of lactose to the diet. The essential factor is creating an intestinal condition favorable to the growth of the acidophilus flora and unfavorable to the putrefactive type. This can be accomplished only by adding lactose in that quantity which by its fermentation will furnish enough acid to overcome the alkalinizing properties of the diet. The diet of the adult is so much more complicated than that of the infant that it demands a great deal more study. What the alkalinizing properties in the intestine of meat, eggs, and other types of protein and minerals consumed by adults are, I do not know, but at any rate, enough lactose must be added to more than overcome these properties and leave a residue of sufficient acidity to discourage the putrefaction flora and encourage the growth of the bifidus acidophilus group.

The pediatrician let me warn, that a combination of whole cow's milk with twelve per cent. carbohydrate is not an ideal infant's food. This mixture contains an excess of calories and may subject the infant to dangerous over-feeding. What we have demonstrated experimentally with this mixture is the importance of definite amounts of lactose as a factor determining certain characteristics of the stool. From the standpoint of feeding if we take such a mixture and cut it in half or two-thirds, depending on the infant's requirements, we have a mixture keeping the same proportions and adapted to the child's body. It is interesting to note that pediatricians have arrived at such combinations through long experience and empiricism. I have used this combination in my practice for several years and find it the most successful of all.

In this connection let me call attention to what seems one of the greatest fallacies that has occurred in all infant feeding and one which has been accepted without question by the pediatricians, including myself, for the last twenty years, namely, that the stool of the artificially fed infant should be of the constipated type. As I look back over these years from this later viewpoint, it seems to me that we all have committed the same error. We have always accepted the stool of the breast fed infant as the normal. No matter how frequently or watery or green, we never considered the stool *per se* as an indication for removing the baby from the breast. Still the normal stools of the breast fed are highly acid and frequently very soft or even watery.

In the early days of my own experience fatal diarrheas of the artificially fed were extremely

common. It was then unwritten law to accuse the diet. So great was the fear of such diarrheas that any type of feeding which would lead to a constipated stool was considered a godsend by pediatricians in that it might prevent these fatal diarrheas. The great scientific weakness of this whole feeding system was that the investigators of nutritional disturbance assumed that the diarrheal stools of the artificially fed were highly acid and hence blamed the acid. They had not as yet learned the true cause of infant diarrhea.

In these last decades we have ruled out intestinal infection by providing wholesome milk. Infantile diarrhea is now considered almost always the result of parenteral infection such as coughs and colds, and in occasional cases the result of nervous excitement from unfavorable household environment. Under all such conditions increased peristalsis sweeps out the intestinal contents whatever it may be. Any acids found in the stools have to a large extent been neutralized. The diarrhea basically is certainly independent of the carbohydrate in the diet, and even of the diet itself unless it should be a secondary reaction in a child already suffering from nutritional disturbance. And in these days severe malnutrition is rare. The fact that babies on lactose feedings often had watery stools and diarrhea was misconstrued. According to my interpretation, increased peristalsis from a parenteral infection sweeps out the intestinal contents. On properly balanced lactose mixtures as with breast milk, the intestinal contents is soft and acid. Hence the stools. These stools are effect and not cause.

In only one type of case does lactose *per se* cause diarrhea. If a baby on a feeding leading to a predominently colon bacillus flora is suddenly changed to lactose, the growth of the colon bacilli is tremendously stimulated with the resulting production of much gas and metabolic products. Clinically the infant may show indigestion and diarrhea. As indicated above, in our experiments it seems to take a minimum of two weeks for a transformation of the flora to the acidophilus type. In the past we have not realized this and have hastily changed the formula again. With a little patience and no change in diet, the disturbance is soon over and the stools assume the characteristics of the breast fed. On the other hand, had we started the new-born with a formula leading to real intestinal acidity no such complication would have developed.

It seems to me that in the past our error has been to use too low rather than too high a percentage of lactose in the formula.

104 South Michigan Avenue.

HIGH VOLTAGE (200 KV) VERSUS SUPER-VOLTAGE (700 KV) X-RAY TREATMENT OF CARCINOMA

ROSWELL T. PETTIT, M. D.
OTTAWA, ILLINOIS

Because of the present day confusion of ideas and opinions concerning the relative value of high voltage x-ray therapy (x-rays generated at 200 KV) as compared with super-voltage x-ray therapy (x-rays generated at 500 to 800 KV) a discussion of this topic by those of us interested in the radiation treatment of cancer is indeed timely. Because super-voltage has been used in the treatment of human disease such a very short time (less than three years) and because we all recognize the importance of evaluating the success or failure of any method of cancer therapy on the basis of five-year cures it is my opinion and belief that much more experimental and clinical proof should be presented and several years at least should elapse before general hospitals and private practitioners rush into this new departure that demands such large expenditures of money. It is possible that in the expenditures of these large sums of money for buildings and apparatus those responsible for such expenditures will have their views more or less biased in order to justify the expenditure—either to themselves or to a hospital board of directors.

It is not my purpose to belittle the efforts now being made by the several research institutes at present studying this question intensively but to warn against too hasty conclusions drawn from insufficient experimental and clinical evidence, to warn against the too hasty expenditure of large sums of your own and other people's money and to point out that many of the advantages of super-voltage can be procured at practically no cost.

In the first place, what is the relative importance of wave length; are the biological effects of

Read before Section on Radiology at Annual Meeting of Illinois State Medical Society, Springfield, May 16, 1934.

x-rays produced at 200 KV any different from those produced at 700 KV, or are they any different from the biological effects produced by radium? The burden of proof in answering this question rests entirely upon the advocates of super-voltage since all the evidence presented to date indicates that there is no difference.

Packard[1] says: "From these data it is clear that when the doses are equal the magnitude of the biologic effect is also equal regardless of the wave length within these very wide limits. There is no evidence that any part of the spectrum is more or less effective than any other part. And since this is true of these various eggs, seeds, and tumor tissues the conclusion may be drawn that it is also true for cells comprising tissues."

In a symposium on this subject presented before the American Society of Roentgenology in Detroit in 1932 these findings are confirmed by Henshaw and Francis,[2] who state: "The greatest difference in effect obtained in a very favorable test (widely different types of biological responses as criteria of effects, widely different test objects, and widely different qualities of radiation) was 32%. From this, then, it appears that the quality factor is not very important. Since the difference is little beyond that which must be accepted as experimental variation, these results, taken alone, do not prove that differential biological effects are caused by different qualities of radiation."

Duffy[3] reporting on the effects of these different wave lengths on the threshold erythema could show no qualitative differences in this biologic test on human tissues.

McNattin,[4] treating cancer of the throat and larynx with 200 KV and gamma rays found the immediate biological effects—epidermitis and epithelitis practically the same if comparable doses were used. There was, however, considerable difference in the *late* effects—the skin was found to be much softer and more pliable after the radium than after the 200 KV x-rays were used. The time was too short to judge the late effects following 700 KV x-rays.

These effects on the skin reported by McNattin differ from those I observed in Coutard's Clinic in Paris. Coutard's effects on the skin following x-ray were the same as found following radium. It must be remembered, however, that Coutard used a greater distance (80 cm. as compared to 50 cm.), more filtration (3 mm. cu. as compared to .5 mm. cu.), less dosage per day and a longer period of time for administering the total dose—he practically reproduces the conditions used in treating with the 4 gm. radium pack. Within certain limits time and intensity are far more important than wave length.

Failla[5] does not feel that because drosophilia eggs and wheat seedlings show no differences, that we can conclude there is no differences dependent on wave length to be found in the human body. He calls attention to the variation in erythema in human skin due to variations in wave length. These variations can be explained on the basis of back scattering as well as by differential effect due to wave length.

In spite of no conclusive evidence he concludes:

"In either case the practical result is that quality of radiation per se very probably plays an important part in radiation therapy. The clinical impressions of those who have had much experience with the use of roentgen rays and gamma rays make this probability almost a certainty."

"The experiments with 700 KV x-ray show that the behavior of this quality of radiation is intermediate between that of 200 KV and gamma rays. Hence better clinical results may be expected from the use of very high voltage x-rays on two grounds:

1. Because of greater depth dose possible.
2. Because of probably greater differential action on tissues of the human body, whether direct or indirect."

His first contention (improved depth dose) can be solved without cost by using greater distance. His second contention is not proved—Coutard's late skin effects with 200 KV x-rays are the same as those with radium.

Furthermore, Mattick[6] of the New York State Institute for Study of Malignant Disease, reported in December, 1932, that using x-ray generated at 200 KV and a filter of 3 mm. cu. and 80 mm. distance and protracted periods of time (daily treatments of 300 R for two or three weeks) his results in fifty-two cases of advanced carcinoma "were as favorable as those obtained from the 4 gm. teleradium pack."

Thus the evidence at hand would indicate that there is no specific wave length effect on tissue and before succumbing to the pressure exerted

by super-high voltage representatives of x-ray manufacturers looking for ten, twenty and fifty thousand dollar orders let me indicate to you a method of getting practically all of the advantages of super-voltage or even the 4 gm. radium pack without this additional investment.

If there is no specific wave length effect on tissue, then the only advantage of increased voltage is increased depth dose.

In a recent paper, Landauer has shown that from a strictly physical standpoint, the higher the voltage and the greater the filter, the greater will be the depth dose of radiation absorbed at a given part below the surface. On the basis, then, of requiring the greatest possible dosage to a tumor, the highest possible voltage and filter should be used. On this reasoning, a million, two million or ten million volts should be better than five hundred thousand or two hundred thousand. However, there are other factors than the purely physical, which enter into the problem, and it is my purpose in this paper to evaluate these other factors, correlate them with the voltage factor and attempt to present a logical technique.

Careful measurements show that increase in depth dose with increased voltage, proceeds at a snail's pace as the voltage rises above two hundred thousand. The cost of equipment and installation, on the other hand, increases rapidly with increased voltage over two hundred thousand volts. The question is whether the slight increase in depth dose is economically worth the greater cost. If there were no other way to increase depth dose than by increasing voltage the cost might well be justified. However, there are two means at our disposal which cost us nothing. One of these is by increasing filter thickness, or using a more efficient filter than copper, and the other is by increasing the target-skin distance.

Increasing the filter can be of value only to a certain point, beyond which intensity is decreased without producing greater depth dose. This point is reached when the filter is sufficiently thick to produce a practically homogeneous beam. Robert Thoraeus, physicist at the Radium Hemmet in Stockhold, has devised a filter which is more efficient than copper. It is composed of tin, copper and aluminum in the proportion of 0.4 mm. tin to 0.25 mm. copper to 0.1 mm. aluminum. The filter I have used for several years is an adaptation of the original Thoraeus filter. Its intensity transmission is equivalent to that of 1 mm. of copper, while its quality transmission is equivalent to that of about 2 mm. of copper. In other words, while it gives a filtration effect of 2 mm. of copper it reduces the quantity of radiation only as much as 1 mm. of copper and raises the depth dose at 50 cm. distance from 42% to 48%. The cost of one of these filters is about $4.00.

Using this Thoraeus filter, with a Villard Circuit Machine, at 200 P. K. V., 50 cm. target-skin distance and an area of 20 cm. by 20 cm., I can get a depth dose in a rice phantom of 48.1%. On the basis of measurements made recently on a four hundred thousand volt Villard Circuit machine, an increase of voltage from 200,000 to 380,000 would increase this depth dose by about three per cent., at a cost of more than $10,000.00, surely a pitifully small amount, when the cost is considered. In addition to increasing depth dose with inexpensive filters it can be improved markedly by using greater distance. Measurements made on the 200,000 Villard Circuit machine show the following relation between depth dose and target skin distance:

Distance in Centimeters	% Depth Dose at 10 cm.
43	43
50	48.1
60	50.1
70	53.0
80	55.7
100	59.0

Here then, is an increase due to distance which overshadows the increase due to voltage—at no monetary cost. There is a cost, however, and that is the cost in time. Our data show that at 70 cm. with two hundred thousand volts we will get about the same depth dose as at 50 cm. with 380 thousand volts. Let us see the relative time required to give the same skin dose. With 200,000 volts, Thoraeus filter, 7 milliamperes (well within the rating of the ordinary air-cooled deep therapy tube) 70 cm. distance the x-ray machine delivered 7.15 "r" per minute as measured in air. With the 400,000 volt machine, at a 50 cm. distance, 2 mm. copper filter, 3 milliamperes (same depth dose as on other machine) 32.0 "r" per minute were delivered. Obviously then, the higher voltage machine is decidedly advantageous from the standpoint of time. In other words, we can get as good a depth dose with the two

hundred thousand volt machine at 70 cm. as we can with the four hundred thousand at 50 cm., but it will take approximately four times as long to deliver the dose. However, it is not necessary to go to 400,000 volt to get output as great as 32 "r" per minute under the conditions mentioned above. The modern 200,000 volt machine when operating an oil cooled deep therapy tube at 30 milliamperes will deliver on the above basis 32 "r" per minute. The cost of the 30 M. A. oil cooled tube and the necessary oil circulating system is in the neighborhood of a thousand dollars. The physical measurements, however, do not tell the whole story.

In 1910 Regaud began the long series of investigations, not yet completed, which have proven that the time rate of application of radiation (gamma rays) plays a very important role in producing the biological effect. For example, it is now generally accepted that 200 mg. of radium for twenty-four hours (4800 mg. hours) in the uterine cervix, will not give as good a clinical result as 30 mg. of radium in the cervix for six days (4320 mg. hours). Coutard has proven this same biologic time effect for x-rays. He has shown that not only high fractionation (about 200 "r" per day) but low "r" per minute (not to exceed 3 "r" per minute) produces the better biological effects than the German massive dose technique. If we accept this principle as valid, then the use of super-high voltage machines with higher output (as compared to the 200 K. V. P. machine) is not only no advantage, but is actually wrong. This high output of 32 "r" per minute which the high voltage machine gives is too massive. Coutard uses not over 3 "r" per minute and 200 "r" per day. This means a treatment time of sixty-six minute per patient per day; in the average hospital or private office having only one deep therapy machine, this would mean a limit of about eight patients per day, and since the treatment is repeated daily for several weeks, it is obvious that such a schedule would be economically unsound. However, if we double the "r" rate to 6 "r" per minute, this would mean approximately thirty minutes per patient and if the equipment is so arranged as to permit the treatment of two patients at a time, thirty-two patients per day could be treated—an entirely practical arrangement. We must conclude, that unless we have a multiplicity of machines (Coutard has eight, with two treatment couches per machine) we cannot follow the Coutard method exactly—but we can, however, by modifying it slightly, have an economically sound method—with no need whatsoever for using voltage in excess of 200,000 and get all the proven advantages of the super-voltage machine—homogenous radiation, short wave length and increased depth dose.

Conclusion: It is not my purpose in this paper to belittle the excellent research work being done with higher voltages; there are some very excellent clinical observers who have some very convincing "impressions" concerning the value of super voltage but conclusive biologic proof of these impressions, however, is still lacking. Until the value of these extremely expensive machines has been clearly demonstrated by the few research institutes in this country qualified and equipped to make careful biological studies I wish to point out that much of the improvement claimed for super-voltage is available at 200 kilovolts at little or no expense.

DISCUSSION

Dr. Robert A. Arens, Chicago, Ill.: Doctor Pettit has presented an excellent and a very timely paper. During the past winter it was my good fortune to be able to investigate the question of ultra high voltage therapy. While I cannot agree with everything that Dotcor Pettit has said, in the main I do. He has covered a very wide field and given very careful consideration to the work as it lies before us today.

In discussing this paper, I would like to take it up from just two viewpoints. First, with regard to the use of high voltage. Ultra high voltage offers us one thing which we are unable to get in any other way, namely, the use of higher filtration. There is no question about the fact that as we go from the lightest of filters up to the heavier filters, our results are not only better and better, but with the use of higher filtration we no longer have to fear the results of moderate over-dosage, or what formerly used to be considered an over-dose. With the increase in voltage and filtration, we can produce an erythema, or so-called epidermitis, in which the skin finally desquamates, and when the old skin comes off there is a fine, soft, pliable skin underneath, with complete regeneration of the underlying normal structures. The heavier the filtration, the better this reaction takes place, without permanent damage. This is important. It is important because the heavier filtration employed, the heavier the dose that can be given with safety to the superficial structures.

In discussing the use of two hundred thousand volts or over, we must consider this from the standpoint of type of current. Two hundred thousand volts no longer means anything, for it must be stated whether

it is pulsating, rectified or constant potential. Since the constant potential is basic, my own feeling is that all voltage values should be expressed in this term.

The increase in intensity, one of the arguments for higher voltage, is of comparative insignificance except in relation to heavier filtration, and this is of no consideration, providing we have sufficient equipment and time to give the dose we desire, regardless of the "r" rate.

I cannot agree that we should not go over two hundred thousand volts, and feel very definitely that we are not taking full advantage of the voltages available at this time, although how high to go I would not care to state at the present moment. If you consider the curve of increased efficiency from 140 P.K.V. to 200 P.K.V., you will find the curve rises very steeply. As we go above 200 P.K.V., up to the present time we do not know whether the curve continues to advance very steeply upward or only moderately. I personally feel that somewhere in the vicinity of 400 thousand constant potential, or its equivalent, is about all that will be required.

One must also bear in mind that the installation of ultra high voltage equipment is expensive and the overhead proportional. That brings me to the second point, namely, the application of radiation and those who receive this radiation.

When we have a modality that is so expensive that only the very wealthy can take advantage of it, we are not serving our function to humanity. We must have something that Mr. and Mrs. Average Citizen can take advantage of, and it behooves us to keep our expenses down to the absolute minimum. We must provide service for those people who require it, regardless of finances.

Dr. Walter G. Bain, Springfield, Ill.: Dr. Pettit did me the courtesy of sending me a copy of his paper before the meeting, and I had a chance to go over it very carefully. I certainly feel that his paper is excellent and is of a lot of value to us fellows who are not in a position to make an investment in one of these new machines.

It surely is a source of relief to think that we do not have to be put in the position of feeling that we have antequated methods of treatment and are obliged to make a large investment. So this suggestion of Dr. Pettit's of our being able to extend the efficiency of our machines by increasing our distance and filtering it, is a very valuable one. Hardly any of us at the present time, probably, are using our equipment to the maximum, from the standpoint of time, and we therefore will be able to meet this situation fairly well.

I feel that the Doctor, in his paper, has covered the matter of recent literature on this and the recent konwledge pretty well, certainly so far as my interest in the matter and my reading is concerned, and I want to express my appreciation of this suggestion.

I would like to ask the Doctor, when he closes the discussion, as to whether we can get the type of filter that he mentions.

Dr. Max Cutler, Chicago, Ill.: First I want to congratulate Dr. Pettit upon his very clear and comprehensive presentation of this difficult subject. With very few exceptions I subscribe to the point of view which Dr. Pettit presents.

The speaker favors the view that there is no difference in the biological effects of x-rays and radium. I am sure he will agree with me that one can gather an equally formidable body of evidence favoring either view. The great difference of opinion which exists upon this problem merely proves that the evidence at hand does not justify the conclusion, and personally I am unwilling to commit myself in this question.

The suggestion that 200 k.v. x-ray therapy is as effective as the higher voltages and as effective as the radium packs again leads us into a field of uncertainty Certainly there is much evidence to indicate that definite advantages may be gained from the use of very high voltages and four-gram radium packs. However, I quiet agree with Dr. Pettit that these problems should be investigated in the larger centers where there are available highly trained personnel, adequate equipment, and elaborate organization. While these investigations are taking place, it seems wise for radiotherapists to adhere to 200 k.v. x-ray therapy. These advantages Dr. Pettit has clearly described. It might also be well to await the results of the high voltages before installing equipment of intermediate voltage, and I would definitely advise those radiologists and institutions who are working with 200 k.v. equipment, if possible, to await the observations and results of the next two or three years before considering a change in their equipment. We are at the present time in a definitely transitional period and the evidence does not permit a conclusion upon these various factors which determine the nature of our apparatus. In view of this general circumstance it is wise, wherever possible, to delay and defer the installation of new equipment until such time as we are more in agreement and are more certain as to the merits of the various therapeutic agents which we employ.

Far more important than the caliber of our equipment is the efficiency with which we use our equipment at hand, and it seems to me more logical and certainly more profitable to devote time, energy and expense to the acquisition of knowledge and understanding concerning the principles of radiation and the newer methods rather than too much consideration to the matter of voltage at this time.

Dr. Roswell T. Pettit, Ottawa (closing): With regard to Dr. Arens' discussion of the paper about the thickness of the filter and the skin effect, comparing this higher filter of 3 millimeters of copper, with one-half millimeter of copper, there is no question that the skin effects are decidedly different.

In 1928 I had the pleasure of visiting the Radiumhemmet in Stockholm. Dr. Bervan, the director of the work, said that x-rays were no good in metastatic glands of the neck, and he uses radium entirely.

In 1933, I visited Coutard's clinic in Paris for about two months. I saw patients treated with 3 millimeters of copper filter and as compared with the platinum

filter that Bervan used, the skin effects, in so far as I could tell by seeing and feeling of the skin in these patients, both in Stockholm and in Paris the skin effects were identically the same.

There is a question in my mind, Dr. Arens, as to how high you need to go in the way of a filter.

The Thoraeus filter, Dr. Bain, can be procured from Dr. Landauer of Highland Park, who makes them and sells them for four dollars a piece.

Of course, I know Dr. Cutler's profound knowledge of this subject, and I know that he has spent so much time in the study of the biological effects of radiation. I am glad he confirms me in my opinion that we do not want to rush headlong into higher voltage.

We have three or four or five institutes in this country that are well qualified to study this problem, and until they have arrived at some definite conclusions and have presented some positive proof, I do not think we need to scrap our 200 kilovolt apparatus. What we really do need is to study our cases and use our apparatus that we now have available, more efficiently.

BIBLIOGRAPHY

1. Packard: Science of Radiology—Chas. C. Thomas, Springfield, Ill., 1933, p. 328.
2. Henshaw, P. S., Henshaw, C. T., and Francis, D. S.: Symposium on Wheat Seedlings and Eggs," Am. Jour. Roent., 29, 333, 1933.
3. Duffy, J. J.: Am. Jour. Roent., 29, 344, 1933.
4. McNattin: Am. Jour. Roent., 29, 350, 1933.
5. Failla, G., E. H. Quincy, L. D. Marmelli, D. E. Rose: "Effects by 200 KV, 700 K.V. Roentgen X-rays and Gamma Rays." Am. Jour. Roent., 29, 303, 1933.
6. Mattich, Walter L.: "Heavily Filtered High Voltage Irradiation in Cancer Therapy—Protracted Treatment." J. A. M. A., 99, 2157, 1932.

FUNDAMENTALS OF INFANT FEEDING

CLIFFORD G. GRULEE, M. D.

CHICAGO

Introduction.—In the past thirty years so much has been written on infant feeding that one fundamental fact has been largely overlooked, and that is, that for the vast majority of infants breast feeding is to be preferred. In a survey not yet published, which covered 20,000 babies taken care of by the Infant Welfare Society of Chicago in the years 1925 to 1929, inclusive, over 91 per cent. of the babies were either wholly, or partially, breast fed, leaving somewhat over 8 per cent. to be artificially fed. While this percentage of breast feeding is probably much in excess of what takes place among those better off financially, this is probably in a large measure, the result not of inability to nurse so much as a lack of desire on the part of the mother and failure on the part of the physician to emphasize the importance of breast feeding. Another factor in the situation has been the widespread propaganda with the use of various kinds of artificial foods. One never picks up a magazine nor turns on the radio that he does not hear propaganda of one sort or another with respect to these. If it is not some specially patented food then it is some specially elaborated milk which proclaims that a quart of milk a day is necessary for the health of the individual. All these and many more factors have entered into the situation, so that now one is regarded as rather old-fashioned if he attempts to persuade a mother that for her own sake and for the good of the baby nursing it is by long odds the best choice. The answer to this general proposition is always that for some reason or other it is better to take the child off the breast. We must, however, always be careful to hold before ourselves the fundamental fact that breast milk is the food for infants and that any fabricated food, no matter how effective, is a comparatively poor substitute. It is quite true that some mothers cannot nurse their babies, but one wonders how often this is due to the fact that they have not had sufficient encouragement on the part of their physicians.

Breast Feeding.—Let us now take up the subject of breast feeding. If, as I have already stated, it is of prime importance that the child should be kept on the breast then there must be a duty on the part of every physician to see that this situation is properly emphasized in the newborn period. If the newly born infant is not kept on the breast and the breast properly developed by it, then, of course, breast feeding is out of the question. Therefore, the most important period for the influence of breast feeding is unquestionably that of the first two weeks. This idea has apparently been lost sight of in recent efforts to complement or substitute in order to do away with the initial loss of weight. When we consider that the initial loss of weight consists largely of excreta, we must realize that its importance has been greatly exaggerated. We must also realize that when a child is not hungry it will not work for its food. It is true that if the child is too hungry, or be somewhat debilitated or weak as a result of hunger then it will not exercise its ability to develop the flow of breast milk by nursing vigorously. It is, therefore, of the greatest importance that the individual phy-

Read at meeting of Pediatricians, Illinois State Medical Society, at Springfield, May 15, 1934.

sician shall exercise in the individual case proper care in the supervision of the nursing of the newborn in order that the infant in question may have the benefit of breast milk for its food.

There are many factors which influence the flow of breast milk. In some individuals the glandular tissue is entirely replaced by fat. In others, it is deficient. Again the number of lactiferous ducts may be so few that it is extremely hard for the baby to get the proper amount of breast milk, or the nipples may be inverted or flat and this too may have its effect. Aside from the local factors, we have to think of the general diet of the mother. However poor the diet of the mother may be, it is a known fact that she will make a sufficient quantity of milk, though it may be poor, at the expense of her own economy. There are, of course, conditions in the health of the mother which render it impossible for her to nurse properly, but these are comparatively few and not nearly commensurate with the number of instances where they are assigned as the cause of early weaning. On the part of the child strength may be lacking and it may be necessary, especially in premature or congenitally debilitated infants, to hand feed them for a certain length of time. However, during this period one should keep up the flow of the breast milk by means of one of the pumps, either a hand or suction pump, or Abt's electric pump. Rare indeed is the child who is unable from the very start to coordinate his movements in such a way as to produce suckling.

There are, however, other factors which enter into this situation and are probably more potent because of insufficient supply of breast milk. I speak of the psychologic side of breast feeding. This is often shown where the mother comes home from the hospital without a nurse, with things in a turmoil, with the result that the quantity of breast milk which has been sufficient for the child's needs up to this time suddenly decreases. It is worries of this type that seem to make a great deal of difference with the flow of breast milk. Poverty is not such a strong factor. In fact, I have often found that among the poorer people in our communities breast milk is more likely to be utilized. The attitude of the mother makes a difference. She frequently feels that "her style is being cramped" by the fact that she has to nurse her baby, that her social life is being curtailed and perhaps that she cannot give as much attention to her husband as she would like to. Or perhaps there is a mother-in-law in the situation, or a grandmother, who tries to stamp her ideas on the mother of the child. All these factors enter into the question of breast nursing, but perhaps the chief psychologic factor is, strange as it may seem, the idea which has permeated the lay mind, that a child can be brought up just as successfully on artificial food as on breast milk. They see only the subcutaneous fat and the weight curve. They do not see those imponderables which are of far greater importance for the health of their babies than is any amount of adiposity or any strict adherence to an artificially prepared weight curve.

Many of these factors may be taken into consideration by the physician if he is to keep the baby on the breast and many are the physicians who will fall by the wayside in their idealism when they come up against the questions and petulance of young mothers. With these things in mind, it is palpably impossible to lay down hard and fast rules as to how a mother shall nurse a baby. Some will say that it does not make any difference whether she nurses it at regular intervals for a regular length of time and that the child will thrive either because of or in spite of this. There is just enough truth in these statements to make them false. In other words, there may be an occasional child who will do well on such a regime, but the fundamental fact remains both from a physiologic and a psychologic standpoint, that the child is best trained by regularity and that primarily this regularity as to time and length of nursing is the first of those disciplines to which the child is subjected. From many standpoints the longer the interval between nursing, within limits, the better it is for the child and for the mother. It gives the infant's stomach a period of rest, it makes the infant hungry so that it is eager to take the breast and it gives the breast time to refill. It allows the mother time when she may seek recreation and if possible get away from the cares of the child; an all important factor. It is for these reasons that I prefer a four hour interval to a shorter one. There are many exceptions unquestionably and these exceptions are to be determined in the individual case by the physician in charge.

As to the length of time that the child shall nurse, this depends altogether upon the ease with

which the child obtains its full supply of milk. Some mothers have sufficient milk to supply two or three children; others have barely enough for their own. Many others have not even that much. The only way I know to find out how much the child gets from the breast is to weigh it before and after nursing. I wonder how often in the maternity wards of our hospitals this is done. I have an impression that in only comparatively few hospitals is the newly born infant given enough care to determine how much it gets from the breast. I think that the number of cases is perceptibly fewer where the attending physician carefully supervises the feeding during the first two weeks. The ideal time of weaning has been pretty well determined at about nine months. Previous to this time of course the child should be given an occasional bottle or a feeding of cereal or vegetable. It is well especially during the winter months to add cod liver oil and orange juice in small quantities.

I want again to lay stress before leaving the subject of breast feeding on the importance of this for the child. I would anticipate a future communication to this extent that I would state unqualifiably that in a survey of a large number of cases deaths among purely artificially fed infants were twenty or thirty times as great as in the breast fed and that throughout infection was more frequent and unquestionably more severe. If an artificial food nourishes the infant without giving it those unknown substances which protect it against infection then an artificial food is by no means the food of choice.

Artificial Feeding. To take up the question of artificial feeding is much simpler but first we should present certain difficulties. The first difficulty which we encounter and which every pediatrician knows is the one which presents itself in the newly born. It is extremely hard in many instances to arrange a proper formula to meet even the superficial needs of the newly-born infant. After the newborn period and as the child gets older the task is simpler. Feeding artificially from a purely nutritional standpoint is comparatively easy. It requires no vast degree of genious to prepare such food for a child that it will thrive and go along. Nature has so built up the human organism that the tolerance for food both as to quality and quantity is very great in these infants. If it were not so, many of us would not be alive today. The whole question of artificial feeding has been displayed in flaming head lines before the laity and the profession for so many years that when one speaks of a simple formula as being sufficient for the care of the infant, one is frequently looked upon as an old fogy. The fact still remains that probably at least ninety per cent. of those babies who are to be fed artificially can be fed on the simplest of formulae—formulae which the general practitioner would have no difficulty in preparing. They require no intimate knowledge of infant nutrition nor any far-flung ideas regarding the finer technicalities of the preparation of infant foods. A simple formula consisting of boiled milk, water and cane sugar to which are added in time orange juice, then cod liver oil, then cereal and vegetable, will meet the needs of probably nine-tenths of the children from a purely nutritional standpoint and the essential elements of a complete food are satisfied. As already indicated this may not hold true in newlyborns, but even with some of these one can get results with such formulae.

The issue has been clouded by various investigations which have shown that under certain circumstances food preparations harder to prepare and less easily used, were necessary and advisable. They have also been clouded by the fact that proprietary infant food manufacturers have cried their wares to the medical profession and I feel that the medical profession has not distinguished the child who needed such special care from the one who did not. I know of no publication which has shown any scientific approach to the comparative values of infant foods. It would only be by comparison of many hundreds of babies on different formulae that one could arrive at any definite conclusion. We may argue as much as we please as to the presumable advantage of this or that form of food on the basis of test tube and animal experimentation, but after all is said and done proof has to be obtained from the effect upon the child. Such proof is not a matter of impression, nor is it a matter of a study of a hundred or two hundred babies without controls.

If I am to be held more strictly to the formula which I would advise, I would say that the total quantity of food would be slightly more than the estimated stomach capacity times the number of feedings; as for example, a baby at

three months of age has a stomach capacity of 4½ ozs. I would give the baby at that age approximately five feedings of 5 ozs. each. As to the quantity of milk, this depends to a certain extent upon the fat content. The amount will vary from 1½-2 ozs. per pound weight in 24 hours. If to this is added an ounce of cane sugar in 24 hours and water to make up the quantity and the whole boiled or three minutes (both for the purpose of killing bacteria and also in order to reduce the size of the casein curd in the stomach) then I think that in most instances all one needs to do is to add a sufficient quantity of cod liver oil and orange juice and as the child gets somewhat older cereals and then vegetables. All the elements of the food are there. They are present in a palatable and readily assimilable form and will meet the needs of the infant in the vast majority of instances. I hear someone say that condensed milk is the thing that he has fed his babies; another one that he has used evaporated milk; someone else buttermilk and Karo corn syrup; someone else S.M.A. and someone else albumin milk; someone else one of the various sugar or cereal mixtures mixed with milk and each one says that his is the best. This empiricism reminds me of the old practitioners of medicine when each doctor had his own pet remedy which he varied slightly from case to case and was quite sure that this remedy was the one thing which got results. I wonder how many of us realize that most of the results we get in artificial feeding of infants are due to the psychological effect upon the mother and the confidence which she puts in us and also how she depends on us to allay her fears. One New England pediatrician, I think, has expressed it best when he said that he knew whether he was able to feed a baby when the mother walked into the office.

In the artificial feeding of infants, I would only say this that a simple formula will do the work, that if you prefer a more complicated one that is your privilege, but be sure that the mixtures which you advise are at least complete in their constituents, as are the more simple formulae with which we usually get results.

Just a few words in conclusion. Breast feeding is by long odds the thing to be desired. The newborn period is often the period during which it is determined whether or not the child shall be kept on the breast. Breast feeding should be as carefully supervised as artificial feeding, though oftentimes it is not necessary. Where it is necessary to put a child on the bottle a simple formula will work in the vast majority of instances. There is no objection whatever to the use of special preparations provided the man who uses them knows how to use them. There is, however, very definite objection to the claim that these preparations are any better than other preparations simply because of experiments of one kind or another, for the usefulness of such preparations is not to be judged by animal experimentation nor by test tube results and finally as in every other situation which confronts the physician, the final test is his judgment in the given case. No hard and fast rules can be set down for us, only guide posts to indicate which way to go. It is just as true in feeding the baby as it is in tending to a case of cardiac failure that attention to details and the judgment of the individual physician must in the end prevail.

DISCUSSION

Dr. Ray Armstrong (Champaign): One rather hesitates, especially at my age, to discuss a paper which has been prepared by a man of the experience Dr. Grulee has had.

There is one thing I would like to emphasize very much, though. That is, especially, the duty of each physician to emphasize the fact that a baby should be put on the breast if it is at all possible. There is no question at all but what an especially young baby gets quite a bit of substance, you might call it, or immunizing qualities from the breast milk that they do not get from artificial feeding.

We found that especially true in our community recently in an epidemic of measles. The breast fed babies who do get the measles are usually lighter cases, and in a good many cases of the very young ones they pass it up entirely.

Another thing which Dr. Grulee did not emphasize, which I think should be, is the test for breast milk. You find a good many men who routinely will take a sample of the milk to a laboratory and have it tested. Oftentimes you will find this test is absolutely worthless because your best test is really the baby—how the baby reacts to it.

Along the lines of artificial feeding we get quite a variety—everywhere from sauerkraut juice up to some of the very high grade, or highly tested ones. These babies, as Dr. Grulee says, get along oftentimes in spite of what they have been fed.

I was quite interested in the statistics of all those cases. As a rule we see more cases in private practice than we do in hospitals, in our communities. I wondered what the percentage was in private practice so far as breast fed is concerned.

A good many men take their cases right from the

start, and we usually see them two or three weeks afterwards, or, when some trouble comes up, and at that time of course, the breast feeding has been done away with entirely.

There is another question I would like to ask. Do you feel that when a child is taken from the breast and put on the bottle that those constitute a good many of the cases we find later with some allergic condition?

Dr. Grulee: I have exactly the same impression Dr. Armstrong has regarding the question of children being fed at the breast in private practice. I think there are many more put on artificial food than should be.

I have another impression and I have some background for that. We have at the Presbyterian Hospital an out patient, new born service on which we are keeping records, and I have not the final figures but for the same class of patients I am inclined to think that more cared for in the hospital leave it on complementary feedings than do those in the district that are born in the homes at time of dismissal. I think that is largely due to the attitude of the nurse who looks at the weight curve, holds up her hands in holy horror and immediately tries to have something more given to the child.

As to the second question, I do not know much about allergy. Some years ago Dr. Bonar and I examined the urines of children with the idea of finding foreign proteins. At the time, we found that breast fed babies, babies who were entirely on breast milk, gave, once in a while, a reaction to egg albumin or to beef albumin. At the time we thought this was probably an error in technic. Since then, I am inclined to think that we cannot be sure materials of that nature do not go all the way through mothers' breast milk and into the excreta of the child.

You have all had the experience of a nursing mother on a diet rich in egg. Maybe your child has a reaction to egg which can be definitely controlled by taking the mother off the egg diet. I have had that experience. Perhaps this is an example of allergy. I am not so sure but that the breast milk, by being more or less a perfect food, and, therefore, more easily absorbable from the intestinal tract, may not be just as good a carrier of allergic material as is the artificial food.

THE TREATMENT OF FRACTURES OF THE LOWER LIMB BY FIXED TRACTION

CHARLES PAPIK, M. D.

CHICAGO

The treatment of fractures of the lower limb is more or less of a bugbear to the rank and file of practitioners. This is true because the usual method of treatment is time consuming, requires too much supervision along with worry, and because the end result is not uniformly good. The modern demand in the treatment of fractures both by the profession and the public is for correct anatomical position and recovery with a maximum of function with the least deformity and disability. To meet this demand with present methods requires long hospitalization, frequent x-ray pictures, and necessitates constant supervision. The requirements for the treatment of fractures are reduction, immobilization, and traction. Success depends upon our ability to obtain and maintain correct length, position, and immobilization of the bone fragments and the soft tissues. The principal factor that interferes with success is muscle spasm, and muscle spasm is the result of inadequate immobilization. If we fail to obtain length and position, there will be muscle spasm, pain, and frequently failure to get a good result. If we get good reduction of the fracture and immobilization is inadequate, there also will be muscle spasm, pain and frequently a poor result. Present methods fail in one or the other requirement in that if correct length is obtained after much experimentation with various weights (for no one knows exactly the weight required to overcome the shortening) position and immobilization of the bone fragments are not adequately maintained. As a result of poor immobilization and uncertain traction, it is not uncommon to find the patient's food inverted, everted, or against the end of the bed with the weights resting on the floor with no traction on the fractured limb. This constant tug-of-war between the muscles and weights with more or less motion of the fragments results frequently in deformity because of mal-union as well as non-union and often in open operation.

Direct skeletal traction by means of pins or calipers as commonly used is condemned by some men, and justly, because both calipers and pins with weights attached over a pulley cause a great amount of irritation and even bone necrosis, and pins in the os calsis have cut through to be held only by the plantar fascia. This is not surprising when one considers the sawing effect produced by the movement of the patient in a Thomas splint dragging twenty-five pounds of weight or more back and forth. Wear and tear of the bone is necessarily the result and occasionally osteomyelitis ensues. Too frequently bad results are obtained because both skin traction or direct skeletal traction either fail to reduce the

Read before Section on Surgery at Annual Meeting of Illinois State Medical Society, of Springfield, May 15, 1934.

fracture, fail to immobilize the fracture adequately, or fail in the maintainance of constant, uniform traction. A final shortcoming is an economical one because of the necessity of prolonged hospitalization. It was because of these shortcomings in present methods that a better and simpler method was sought to give better control of the fracture. The method that overcomes the disadvantages pointed out is that of fixed traction as devised by Dr. Orr of Nebraska. By means of this method a fracture of the femur or both bones of the leg can be reduced, traction applied and immobilization secured with one to two hours, thus accomplishing with certainty that which frequently is not accomplished in from one to two weeks.

By fixed traction is meant traction that is so applied when the fracture is reduced and so immobilized or fixed in the immobilizing apparatus that it and the fractured extremity remain undisturbed and unaltered until at least preliminary healing has taken place. This produces a constant, uniform, undisturbed traction. This is accomplished in the following way:

Reduction of the Fracture: The patient is placed upon the fracture table with a padded perineal post against the pubic bones and anesthetized. Both feet are bound to the pulling devices on the table and traction applied by turning the screws of the foot pieces until both legs are of equal length by measurement. With sufficient pull on the fractured limb, shortening is overcome and the fragments tend to fall into anatomical alinement or can be manipulated to do so. In fracture of the shaft of the femur sometimes the lower fragment tends to tilt posteriorly due to the pull of the gastrocnemius. This is overcome by a sling under the fragment which pulls it up into position and slightly flexes the knee. This means of reduction, we believe, tends to lessen greatly the interposition of soft tissue, because when length is obtained, the muscle tissue being elastic and contractile tends to automatically release itself, thus preventing to a great degree the possibility of nonunion. The soft tissues as well as the bone being restored to their anatomical position, nerve impulse and circulation are re-established and swelling rapidly subsides and does not recur. While trauma causes swelling, we believe that by far the greatest amount of swelling and pain is due to distortion of blood vessels and nerves.

The next step is to apply moleskin adhesive straps to both sides of the limb extending to just above the fracture site. The straps are three inches wide and have the frayed end of a soft pliable rope sewn into one end and vary in length accordingly for fracture of the femur or the leg. The rope extensions are tied to the foot piece of the pulling device and a three inch bandage is applied snugly but not tightly to keep the moleskin in good contact with the skin.

Immobilization and Traction: By immobilization is meant splinting which permits the least possible movement of the fragments thereby preventing pain which causes muscle spasm, which in turn causes malposition and frequently deformity and disability. To obtain such immobilization after reduction of a fracture of the femur, a body spica plaster of Paris cast is applied down to about a hand's breadth above the ankle joint together with fixed traction. When the cast is hardened sufficiently the rope extensions are untied from the foot piece and knots are made in it about four inches apart. Then the ropes are drawn down as far as possible to take up the stretch of the skin and then folded back upon the sides of the cast together with about two inches of the moleskin adhesive plaster. An assistant keeps the ropes taut against the cast and a plaster bandage is applied to incorporate the ropes in the cast. When this hardens the foot is detached from the pulling device and the traction that was produced by it is now maintained by the moleskin straps and ropes incorporated in the cast, thus preventing kick back of the leg into the cast. The point of counter-traction is the tuberosity of the ischium. The cast is then completed to include the foot in dorsiflexion which prevents rotation of the foot or of the fragments. Thus we have established a true fixed traction, constant and uniform, with relaxation of the muscles which now act as internal splints, as well as restoring the anatomical position of the soft tissue and from then on the patient is free from pain, swelling and discomfort.

Contrary to all teaching the cast is not split and we do not get secondary swelling because, as stated above, the distortion of blood vessels and other soft tissue is corrected, the fragments are in apposition, and the principal cause of swelling has been removed. Within twenty-four or forty-eight hours after reduction and

fixation the cast has become sufficiently hard so that the patient may go home as there is no need for him to remain in the hospital because there is nothing in particular to watch and nothing to adjust. We know his fracture is reduced by means of the roentgenogram; that length and alinement are restored; and that traction is applied and fixed and will remain so until at least early callus formation occurs. In our experience the moleskin straps have not slipped or become detached from the skin even at the end of eight weeks in femur cases. The patient never experiences any pain after reduction and fixation and has much more freedom of movement in bed. It is a great economical saving to have the patient home in two or three days instead of remaining in the hospital for six or eight weeks.

Where it is inadvisable to use moleskin straps for traction because of a short leg surface for its application, as in fractures close to the ankle, a Steinman pin is driven through or over the os calcis or calipers are inserted into the malleoli and incorporated in the cast. When the cast is hard and the traction bandage on the foot piece is released the pin or calipers being incorporated in the cast prevent kick back and produce a true fixed traction. In oblique fractures of both bones of the leg which are difficult to maintain in position occasionally, a second pin can be inserted through the crest of the tibia and incorporated in the cast, thus assuring position and positive fixation and traction. When pins or calipers are used the same surgical cleanliness is required as in abdominal surgery, including rubber gloves. When good surgical technique is followed, the danger of infection is no greater than in any other surgical procedure. Pins or calipers are left in until good union occurs and in our experience we have left pins in the bone for a period up to seventy-two days without irritation, bone necrosis, or discomfort to the patient. The holes heal quickly and scarcely leave a scar.

Again contrary to accepted teaching early passive motion is not practiced in any case of fracture but immediate active motion is instituted by very frequent flexion and extension of the toes and frequent movement of the patella as advocated by Boehler of Vienna.[1] This active motion stimulates circulation and absorption of exudates, prevents swelling, exercises the flexor and extensor muscles and prevents atrophy to a marked degree. Boehler says, "I must say that I consider massage and passive movements in all recent injuries and disease as being most harmful. Massage and passive motion not only cause pain but also disturb the rest, so necessary for the process of healing."[2] Bier says, "An active muscle draws arterial blood in and propels the venous blood when it contracts. When it remains inactive for a long time the blood supply decreases and the venous blood stagnates, producing the retention of transudates in the extremity. The muscle becomes atrophic and lime salts in the bones decreases."[3] From the above statement it is evident that passive motion is detrimental to healing and may be the cause of non-union. Many surgeons hold that immobilization produces atrophy and stiffness but this does not hold true in our experience. Dr. Albee very definitely says, "Immobilization does not produce permanent atrophy. Many times efficient immobilization, if proper physiotherapy is carried out afterward, will prevent stiffening rather than produce it."[4] Stiffness is due to pathological changes, tissue destruction and scar tissue and these are kept at a minimum not by motion but by rest. Early passive motion increases these changes by producing more irritation which produces more fibrosis with its resulting ankylosis. What little stiffness is present when the cast is removed quickly disappears with a little manipulation.

The method of fixed traction is equally applicable to the treatment of compound fractures and together with the Orr method of treating infected wounds gives immediate relief from pain and gives the patient a chance to get well with the best possible result.[5] The adoption of this method of treating fractures of the lower limb, we feel confident, will eliminate to a very great extent the necessity of plating for non-union and mal-union. Results will be more uniformly good anatomically and functionally, splints of various types can be eliminated and last but not least the method is so simple that the average practitioner can use it with confidence with the expectation of getting better results than are usually obtained by other methods of treatment and with considerably less worry and work.

SUMMARY

1. The present methods of treatment of fractures of the lower limb are defective as they do

not adequately meet the requirements and do not give the best results in the hands of the general practitioner.

2. Overcoming the shortening is uncertain, and failure to immobilize effectively as well as inefficient traction are common occurrences.

3. Present methods of direct skeletal traction are frequently damaging to the patient and to the healing process.

4. The application of fixed traction produces immediate reduction of the fracture; maintains a constant uniform traction and immobilizes with no discomfort to the patient.

5. Direct skeletal traction can be applied without causing bone necrosis or irritation and is positive in its effect.

6. The economy and availability of the plaster cast eliminates an array of appliances.

7. The period of hospitalization is considerably shortened thereby being an economical factor to both patient and doctor.

8. The results are uniformly better.

9. Both patient and doctor have peace of mind. The patient is not tormented by frequent dressings and the doctor is free from wory.

BIBLIOGRAPHY

1 & 2. Boehler: Treatment of Fractures, Pages 7-14.
3. Ibid, Page 9.
4. Fred H. Albee: Am. J. of Surg., New Series **4**:482, 1928.
4. Fred H. Albee: California and Western J., **37**: 221-222, 1932.
5. H. Winnett Orr: Osteomyelitis and Compound Fractures, C. V. Moshy Co., 79-85; 111-115; 1929.

871 E. 63rd Street.

871 E. 63rd Street.

DISCUSSION

Dr. S. H. Easton (Peoria, Ill.): I would like to emphasize what Doctor Papik has said—that, if you have a fracture, reduce in accordance with certain anatomical configurations and maintain that reduction until you have firm bony union. Then you will not need massage or need passive motion, etc. A soft callus is a yielding callus and yielding callus becomes tender under strain. When you try to move these fractures before there is firm bony union, then you are bound to have pain and bound to have edema. As I said, in my paper, I hate edema. If you keep away from that pain and edema by keeping the fracture immobilized until you have got good bony union, then the restoration of function is easy.

I would just like to ask the Doctor one question about the first slide that he showed with a bad dislocation. He said that case walked the next day, if I recall. My own experience with fractures of that type is that there is so much edema, so much hemorrhage, etc., that any time you put a walking cast on a fracture that bad, you usually have to split it. I would be afraid to let my fracture case walk on a walking-iron until I had a cast on that was tight and holding good and the leg was not swollen. I would like to know how he got away from edema in that case.

Dr. Charles Papik (closing): I think the secret of the whole thing is in getting the fracture early before you get edema. I think that is a very important point and not to wait for swelling to go down, as so many men do. You still see men leave fractures lying in bed for three or four days, waiting for the swelling to go down. If you get these cases in the first couple of hours, there is very little edema. I follow the method of squeezing out the edema present and I put on a non-padded cast and the trick is to put it on so that you do not constrict the leg. I have never had to split a cast, not since I have followed that method. I make these people walk and that maintains circulation and prevents edema. When the fracture is reduced accurately there is no distortion of the blood vessels or nerves, and it is amazing how fast the edema disappears as I pointed out. The blood vessels and lymphaties are straightened out, and the edema disappears rapidly and does not recur.

FIND TREATMENT FOR HEART WORMS IN DOGS

Dog owners and veterinarians now have available an effective means of combating heart worm, a parasite that has spread rapidly in recent years from the South to the Atlantic Coast States. Scientists of the U. S. Department of Agriculture have just announced that Fouadin, a complex antimony compound, will kill the worms and the larvae.

Fouadin is known to chemists as sodium-antimony-III-bis-pyrocatechin-disulphonate of sodium. A suitable course of treatment with this drug, the investigators announce, will usually destroy some or all of the adult worms in the heart and pulmonary artery, and will free the blood stream of larvae, thus preventing the infested dog from acting further as a spreader of the parasite to other dogs.

Common symptoms of heart-worm infestation are that the dog tires easily, may gasp, breathe heavily and even collapse. The dog may cough or show nervousness and may have convulsions and other symptoms resembling those of rabies or hydrophobia. Death may result from asphyxia, clogging of blood vessels, and dilation of the heart.

Fouadin affects both the liver and kidneys and should, therefore, be administered only by a competent veterinarian; otherwise the life of the patient may be endangered. In cases of heavy infestations with heart worms the drug should not be given rapidly, in large doses, or at too close intervals since the destruction of considerable numbers of worms at one time may clog the pulmonary artery and result in embolic pneumonia.

Fouadin may be administered either intramuscularly or intravenously depending on the weight and condition of the dog. The former method of injection is preferable for small dogs in which the subcutaneous veins

are small and in large dogs when the physical condition demands more careful control of the dosage than can be obtained by intravenous injections. On the other hand, the intravenous method permits the use of a smaller total dosage and quicker results. Extreme care is essential in treating dogs having chronic or acute disease conditions which might influence the tolerance of the animal to the drug. Although Fouadin did not result in abortion in one pregnant female used in the investigations, it is considered advisable, ordinarily, to withhold treatments during pregnancy.

CUT NERVE SHOWS "POLIO" ENTERS BODY THROUGH NOSE

When the olfactory nerve is cut, infantile paralysis fails to develop even after the causative virus of the disease has been placed inside the nostrils of a susceptible monkey.

This fresh evidence that the disease enters the body via the nerve of smell was obtained from investigation carried out by Drs. Maurice Brodie and Arthur R. Elvidge at New York University and Bellevue Medical School and McGill University, Montreal. The experiments are reported in *Science*.

Like other investigators, Drs. Brodie and Elvidge found that monkeys promptly developed the disease when the virus was placed inside the nose or swabbed on the membranes lining the nostrils. Examination of the olfactory nerves of such animals has shown the presence of the virus in the nerve, indicating that this is the route of the virus to the brain. But when the olfactory nerve was cut, the virus apparently could not find its way to the brain, since the monkeys in these cases remained healthy and free from paralysis.—*Science News-Letter.*

PARROT FEVER

Nine deaths from parrot fever and twenty-five cases of the disease have caused the U. S. Public Health Service to send Dr. L. F. Badger of the U. S. National Institute of Health to Pittsburgh to investigate the outbreak there. Dr. Badger has been sent at the request of Pittsburgh health authorities.

The outbreak, said to be one of the most severe that has occurred in some time, originated in a Pittsburgh department store which sold birds. One of the birds from the store was sent to the federal health authorities in Washington and on examination was found to have suffered from parrot fever or psittacosis.

A severe outbreak of parrot fever in many parts of the country occurred in 1930. In order to fight the disease, which was till then little known, the importation into this country of love birds and parrots, which transmit it, was forbidden temporarily. The disease subsequently affected birds in aviaries in southern California and a number of cases were reported from that source. The disease has now become rather a commonplace instead of being a novelty, and outbreaks of two or three cases are reported to the U. S. Public Health Service every few months. The outbreak in Pittsburgh seems to be much more severe.—*Science News-Letter.*

THE ABSENCE OF DETERIORATING EFFECTS OF BROMIDES IN EPILEPSY

Harry A. Paskind, Chicago (*Journal A. M. A.*, July 14, 1934), found that almost all writers on the use of bromides in epilepsy have stated that, although they are efficient in eradicating or ameliorating the seizures, they are dangerous in that they sometimes produce mental deterioration. A study of fifty-four patients with epilepsy who have taken bromides in sufficient amounts to affect the seizures for from one to seventeen years show that only three, or 5.5 per cent, became deteriorated. The occurrence of deterioration in this more adequately treated group was less than in a larger, less adequately treated group. The misleading statements in the literature regarding the adverse effects of bromide in epilepsy are due to failure to distinguish between intoxication and deterioration, the use of bromides in persons with epilepsy who were destined to deteriorate without their use, and the chance occurrence of behavior disturbances in insane or neurotic epileptic patients who had received bromides and in whom such behavior disorders occur without bromides.

INHERITANCE OF DIABETES

Priscilla White, Elliott P. Joslin and Gregory Pincus, Boston (*Journal A. M. A.*, July 14, 1934), found that each member of similar twins developed diabetes more than four times as frequently as each member of dissimilar twins; namely, 70 per cent of the former and 16 per cent of the latter. The incidence of diabetes in the relatives of a diabetic population is significantly greater than in a nondiabetic group. Mendelian ratios were found in a consecutive series of diabetic cases and in a selected mendelian population tested by histories and blood sugars. Many blood relatives of diabetic patients have symptomless hyperglycemia, the significance of which is unknown. These instances occurred when one would expect diabetes to develop according to mendelian inheritance. The authors believe that the potentiality for developing diabetes is transmitted as a simple mendelian recessive trait and that the secondary factors which permit the expression of the gene can best be studied among predestined diabetic patients; namely, homologous twins of diabetic patients and the offspring of two diabetic patients.

ORGANIZED MINORITIES

Organized minorities have done and now are doing a great deal of harm in this country, and it makes no difference whether organized to secure governmental benefactions, or for some other purpose, if that purpose is purely selfish or is designed to create sectional, class, group, religious or other differences. It should be remembered that the persistent propaganda of such organized minorities is to sway the people by some form of an emotional appeal that differences may be created, out of which those guiding these movements may reap individual benefit. Most of such organized minorities are free in their denunciation of all who oppose them and by their methods intimidate the average person, so that their opposition is small indeed. Every loyal American should exercise the greatest care

to prevent being carried away by some emotional appeal, or by some promise of personal reward through connection with, or approval of, any of the many dangerous organized minorities to be found in this country.—*Committee on American Education.*

SUPERIOR PULMONARY SULCUS TUMOR

Harold W. Jacox, Ann Arbor, Mich. (*Journal A. M. A.*, July 14, 1934), presents two cases of the clinical entity described as superior pulmonary sulcus tumor. The clinical features of this condition represent a definite and striking syndrome quite different from that of the usual primary malignant growths of the lung. The apical chest tumors reported by Henderson do not fall into this particular category. Neither do large lesions of the upper lobe, which may also produce Horner's syndrome. The author presented evidence supporting the view that superior pulmonary sulcus tumor is an atypical form of primary bronchogenic carcinoma. He found that a modification of Coutard's method of intensive deep roentgen therapy failed to control the symptoms of this disease. He states that chordotomy should be considered as a valuable palliative procedure. Wound healing was not retarded by intensive roentgen therapy.

TREATMENT OF MALDESCENT OF THE TESTICLE

Samuel Cohn, San Francisco (*Journal A. M. A.*, July 14, 1934), treated four otherwise normal children for maldescent of the testicle with subcutaneous injections of anterior pituitary-like principle. Three cases evidenced complete improvement. The fourth case showed evidence of mechanical obstruction and will require operation. A fifth case presented one operated side, which furnished an admirable opportunity for a controlled observation, and showed evidences of pituitary hypofunction. Both the condition of the testicles and the general glandular hypofunction improved under the therapy. The sixth patient was operated on again after several years and injections of anterior pituitary-like principle were used as an adjunct to surgery. The result was entirely successful as to both the condition of the testes and the general condition of the patient.

DANGER OF ANGER

Golfer: "Hi, caddie! Isn't Major Pepper out of that bunker yet? How many strokes has he had?"

Caddie: "Seventeen ordinary, sir, and one apoplectic!"—*Boston Transcript.*

MUMMIES AND CODFISH

When the mummy of Pharaoh Rameses the Great was found, it was packed in the pages of the newspaper, *Le Temps*, and brought to Cairo in a wagon. The customs official weighed it on the scale and, "Not finding a corresponding customs levy in the list of tariffs, applied to it the ruling in regard to salt codfish."

This is not a tale of the Middle Ages, but of our very recent past. And can we ascribe such ignorance only to our past? Up to now a skeleton is imported under the tariff on second-hand things.—*Nicholas Rocrich.*

DO YOU KNOW?

From Science News-Letter

Disease-bearing mosquitoes are practically unknown in the Florida Everglades.

Tests show that yellow corn contains more vitamin A than white corn.

Young and rapidly growing cells of the body are more sensitive to radium than old or adult cells.

The number of children born in the United States in 1933 is estimated at about 600,000 fewer than in 1921.

Almost twice as many cases of otosclerosis, or hereditary progressive deafness, occur in females as in males.

Recent chemical discoveries may result in greater use of tobacco instead of arsenic preparations in insecticides.

Deaths from carbon monoxide gas are increasing out of all proportion to other forms of accidental death, warns the National Safety Council.

The cinchona tree which yields quinine is a native of South America, but today 97 per cent of the world's supply comes from Java.

Medical records were kept in the temple of Aesculapius in Greece, case histories being registered on marble tablets.

Ephedrine, discovered ten years ago, and used widely in nasal preparations, is obtained from a Chinese drug-plant used as a cure-all in China for 5,000 years.

It was in the beginning of the nineteenth century that pharmacists began to isolate the active constituents from crude herbs and plant products.

The University of Michigan Herbarium has been collecting botanical specimens for 95 years, and now has over 220,000 examples of plant life.

The death rate from tuberculosis among the Indians is seven or eight times that of the general population.

A queer "four-eyed" fish of Central America has its eyes divided in two, the upper part being for sight above water, and the lower for underwater sight.

WORDS AND FRIENDS

There are over 400,000 words in Webster's dictionary. Out of four hundred thousand people, would you choose to become intimate with any of them without discrimination? You must choose your words as you choose your friends.—*Chicago Tribune.*

METAPHEN IN COLITIS

For the purpose of using Metaphen in the treatment of those cases of colitis showing a preponderance of streptococci in the stools, a preparation is now available containing that drug in a strength of 1:5,000, in a 3 per cent agar jelly.

Because Metaphen is a mercurial preparation, which may produce toxic reactions due to idiosyncrasy, it must be used only under the care of a physician.

Marriages

HARRY LOUIS BERMAN to Miss Ella Stein, both of Chicago, June 24.

WILLIAM E. BUEHLER to Alice F. Willson, both of Chicago, July 26.

JOHN H. GLYNN to Miss Eleanor C. Schmidt, both of Chicago, June 18.

Personals

Dr. Ernest E. Davis, Avon, Ill. addressed the Jo Davies County Medical Society at Elizabeth, Ill., Aug. 2nd on: Occipito Posterior positions and their treatment.

Dr. William J. Carter, Mattoon, discussed stomach disorders, among other speakers before the Coles-Cumberland Medical Associaton at Neoga, July 19.

A public celebration was held at Cissna Park, July 15, in honor of Dr. William R. Roberts, who has practiced thirty-five years in the community.

Dr. Felix W. Sokolowski addressed the Madison County Medical Society in Alton, August 3, on increase of mental disorders and importance of mental hygiene.

Dr. Joseph Welfeld was elected president of the Chicago Urological Society at the annual meeting, May 24.

Dr. Ernest Gelhorn, professor of physiology, University of Illinois College of Medicine, was awarded the Alvarenga Prize for 1934 for his essay entitled "The Influence of Parathormone on the Neuromuscular System: An Experimental Analysis." The prize amounting to about $300, is awarded by the College of Physicians of Philadelphia.

Dr. Frederick C. Warnshuis, Grand Rapids, for many years speaker of the House of Delegates of the American Medical Association and secretary of the Michigan State Medical Society, will go to California, October 1, to become secretary and director of public relations of the California State Medical Association. Dr. Warnshuis, a native of Iowa, has been secretary of the Michigan State Medical Society for about twenty-one years.

Dr. William H. Walsh, hospital consultant, sailed, July 21, for London, where he will board a soviet steamer for Leningrad. Dr. Walsh is making an independent study of health and hospital conditions and practices in soviet Russia and his itinerary will include Leningrad, Moscow, Kharkov, Odessa, Kiev and Minsk. He will return in September via Warsaw, Berlin and Paris. Films on obstetrics made by Dr. Joseph B. DeLee will be exhibited by Dr. Walsh in various medical schools in the soviet union.

Dr. Edwin R. LeCount, professor of pathology, Rush Medical College, has received the 1934 James E. Stacy Award by the University of Cincinnati College of Medicine for "his experimental studies on the isolation of streptococci from sore throats and the experimental induction, through their injection, of acute, healing and scarring types of nephritis, identical with the chronic nephritides observed in man." The award consists of a medal and a sum of money and is bestowed for "significant contribution to the theory of focal infection in theory or practice."

Dr. Vernon C. David, since 1929 clinical professor of surgery, Rush Medical College, has been appointed chairman of the department, succeeding Dr. Arthur Dean Bevan, who has held the position since 1902. Dr. David graduated from Rush in 1907 and has been connected with the school since 1910. His first appointment was as assistant in surgery. Dr. Bevan will continue with his work at Presbyterian Hospital and at Rush as Nicholas Senn professor of surgery. He began his association with the school in 1887 as professor of anatomy. He is also an alumnus of Rush, having graduated in 1883.

News Notes

The officers of the Chicago Ophthalmological Society for the coming year are—E. V. L. Brown, President, Thomas D. Allen, Secretary.

The Society meets the third Monday of the month, from October to May.

—The Research and Educational Hospital of the University of Illinois College of Medicine, 1819

West Polk Street, is carrying on experiments to determine whether electrical changes in the air during storms are related to attacks of pollen asthma. Ten women were invited to participate in the research, which began August 15 and will continue until September 31.

—An outbreak of nine cases of epidemic encephalitis with four deaths in Highland was reported by the state board of health, August 8. The disease appears to be of the same type that prevailed in St. Louis during the summer of 1933. Twenty-five cases occurred in Highland and Madison County during last year's epidemic. All the patients except one were more than 50 years old.

—The International Assembly of the Inter-State Postgraduate Medical Association of North America will be held in the Public Auditorium, Philadelphia, Pennsylvania, November 5-9, 1934. Many distinguished teachers and clinicians will appear on the program. A major list of the names of the contributors to the program, with other information, appears elsewhere in this Journal. All members of Illinois State Medical Society are cordially invited to attend. Registration fee of $5.00 admits all members of the profession in good standing.

—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended August 11, indicate that the highest rate (18.8) appears for Peoria and the rate for the group of cities as a whole was 9.7. The death rate for Peoria for the corresponding week of 1933 was 12.4 and for the group of cities, 9.2. The annual rate for the eighty-six cities for the thirty-two weeks of 1934 was 11.8, as against a rate of 11.2 for the corresponding period of last year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have large Negro populations may tend to increase the death rate.

—The Illinois Emergency Relief Commission has directed that physical examinations be made of all men and women now enlisted under the Work Relief Administration and those to be employed in the future, to protect the workers from avoidable injury or disease, and the government or other employing bodies from future unjustifiable claims for compensation. The work has been arranged in Cook County so as to give assistance to physicians who are in financial need. Physicians desiring this work should communicate with the Medical Relief Service, 1319 South Michigan Avenue. Groups will be be assembled for examination at 1222 South Michigan Avenue. Physicians will be assigned to make examinations during three hour periods for ten consecutive working days not including Saturdays and Sundays, when the unit will be closed. Assignment will be made once each month and reimbursement per month will therefore be $75 for thirty hours' work.

—There is no evidence of unusual malnutrition among school children in Scott County, while the children in Franklin County are better provided for now than in any recent years, according to the Illinois State Department of Health, which recently completed a five weeks study of child health conditions in the two counties. The purpose of the survey was to determine whether malnutrition and other conditions attributable to undernourishment or lack of food have increased among Illinois children during the last four years. A total of 2,394 children, nearly one-half of whom were in the first four school grades in the two counties, were examined. These counties were selected as typical of rural and mining counties. The physicians making the survey were of the opinion that there was no evidence of an unfavorable trend that may be charged against economic conditions of recent years.

—Lectures were given in the Hall of Science at the World's Fair during August by the following physicians. A committee of the Chicago Medical Society arranged the program through the Educational Committee of the Illinois State Medical Society:

August 1—"The Role of Calcium in the Body," Kenneth K. Jones, M. D.

August 2—"Believe It or Not About Babies," W. C. McKee, M. D.

August 3—"Growths in the Mouth and Their Danger," Casper Epstein, M. D.

August 4—"Human Salvage," Harry E. Mock, M. D.

August 6—"Avoiding Contagious Diseases," W. W. Bauer, M. D.

August 7—"Athlete's Foot," James Herbert Mitchell, M. D.

August 8—"Infantile Paralysis," Fred W. Hark, M. D.
August 9—"The Story of Blood Transfusion," Raymond H. McPherron, M. D.
August 10—"Mental Health in the Child," Harold S. Hulbert, M. D.
August 11—"Health and Weather—Some True and False Beliefs," Frederic T. Jung, M. D.
August 13—"Heart Disease," Robert S. Berghoff, M. D.
August 14—"Allergic Disease of Childhood," Franklin J. Corper, M. D.
August 15—"What Cancer Is and How It Happens," Frank L. Rector, M. D.
August 16—"Health of the Infant and Preschool Child," Heyworth N. Sanford, M. D.
August 17—"Some Surgical Aspects of the Thyroid Gland," Louis D. Moorhead, M. D.
August 18—"Blindness: Its Cause and Aftercare," Oscar B. Nugent, M. D.
August 20—"Modern State Hospital Treatment of Mental Disorders," Charles F. Read, M. D.
August 21—"Accidents Due to 20th Century Speed," John R. Harger, M. D.
August 22—"Hay Fever," Tell Nelson, M. D.
August 23—"Occupational Diseases," C. O. Sappington, M. D.
August 24—"Having Operations," Thomas A. Carter, M. D.
August 25—"Resuscitation," Hart E. Fisher, M. D.
August 27—"Hoarseness—A Warning Sign of Cancer," M. Reese Guttman, M. D.
August 28—"Ulcer of the Stomach," Lowell D. Snorf, M. D
August 29—"The Ringworm Situation," Cleveland J. White, M. D.
August 30—"Infections of the Mouth," Joseph E. Schaefer, M. D.
August 31—"Feet and Posture," Frederick C. Test, M. D.
Committee—Dr. Wilbur Post, Dr. Julius H. Hess, Dr. Hugh N. MacKechnie, Chairman.

Deaths

Thomas E. Alyea, Earlville, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1880; also a druggist; aged 81; died, July 15, of shock, as the result of a fall.

Frederick W. Belknap, Chicago; Northwestern University Medical School, Chicago, 1894; aged 66; died, July 16, of cerebral hemorrhage.

Henry Thompson Burnap, Alton, Ill.; St. Louis Medical College, 1878; aged 78; died, July 3, of heart disease.

J. Baptist Butts, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; aged 83; died, March 14, of chronic nephritis.

Chambers D. Calhoun, Elburn, Ill.; Jefferson Medical College of Philadelphia, 1884; aged 75; died, July 11, in the Community Hospital, Geneva, of heart disease.

Andrew J. Coey, Chicago; Chicago Medical College, 1880; aged 76; died, June 29, of carcinoma of the larynx.

Alfred L. Fein, Chicago; Loyola University School of Medicine, Chicago, 1917; a Fellow, A. M. A.; aged 46; died, July 18, of carcinoma of the lung with metastasis to the brain.

Anna Jacobs Green, Chicago; Hahnemann Medical College and Hospital, Chicago, 1900; aged 62; died suddenly, June 14, of myocarditis and arteriosclerosis.

Roy Wesley Klaus, Chicago; Hahnemann Medical College and Hospital, Chicago, 1912; aged 47; died, July 11, in St. Francis Hospital, Evanston, of acute appendicitis.

Florence B. MacRae, Chicago; Eclectic Medical College, Cincinnati, 1926; a Fellow, A. M. A.; on the staff of the Woodlawn Hospital; aged 44; died, July 9, of carcinoma of the liver.

Calvin Carlin Montgomery, Lincoln, Ill.; Washington School of Medicine, St. Louis, 1900; past president of the Logan County Medical Society; served during the World War; aged 65; died, May 15, of myocarditis, bronchial asthma and diabetes mellitus.

August H. Niemiller, Browns, Ill.; Medical College of Ohio, Cincinnati, 1875; aged 81; died, June 14, in the Olney (Ill.) Sanitarium.

Charles Aubrey Parker, Chicago; Rush Medical College, Chicago, 1891; a Fellow, A. M. A.; member of the Clinical Orthopedic Society; associate clinical professor of orthopedic surgery at his alma mater; past president and secretary of the alumni association of Rush Medical College; chairman of the committee on after-care and study of infantile paralysis of the Visiting Nurse Association of Chicago, for which committee he prepared a pamphlet on "Infantile Paralysis for Parents and Patients"; for many years on the staffs of the Home for Destitute Crippled Children, Cook County Hospital and the Presbyterian Hospital; aged 66; died, July 16, of pseudobulbar paralysis.

Isaac Sher, Chicago; Illinois Medical College, Chicago, 1901; aged 78; died, July 25, of myocarditis, nephritis and arteriosclerosis.

Alexander Tullis, Chicago; Jenner Medical College, Chicago, 1909; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1911; aged 78; died, June 28, of lobar pneumonia and benign prostatic hypertrophy.

Harry Wood, Batchtown, Ill.; St. Louis University School of Medicine, 1905; a Fellow, A. M. A.; served during the World War; aged 55; died, July 4, of endocarditis.

David Henry Worthington, Aurora, Ill.; Rush Medical College, Chicago, 1879; aged 83; died, June 2, of chronic myocarditis.

mber, 1934

d 75; died,
Geneva, of

dical Col-
cinoma of

ity School
A. M. A.;
the lung

n Medical
62; died
riosclero-

n Medical
47; died,
of acute

Medical
. A.; on
44; died,

; Wash-
00; past
Society;
ed, May
diabetes

cal Col-
ed, June

Medical
member
clinical
mater;
associa-
ne com-
aralysis
go, for
on "In-
s"; for
estitute
nd the
16, of

e, Chi-
arditis,

al Col-
d Sur-
e Uni-
28, of
rophy.
versity
served
4, of

Rush
June